

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

ANNUAL MANAGEMENT REPORT

1973

ARCTIC-YUKON-KUSKOKWIM REGION

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TABLE OF CONTENTS

PREFACE	1
AREA INTRODUCTION	2
AREA SUMMARY	11
KUSKOKWIM DISTRICT	
Introduction	19
District Summary of 1973 Commercial Fishery	20
Kuskokwim River (subdistricts 335-10 and 335-20)	21
Quinhagak (subdistrict 335-40)	27
Goodnews Bay (subdistrict 335-50)	28
Outlook for 1974	29
YUKON DISTRICT	
District and Subdistrict Boundaries	65
Commercial Fishery	65
Subsistence Fishery	71
Escapement	73
Outlook for 1974	74
NORTON SOUND DISTRICT	
Introduction	106
District Summary	107
Nome (subdistrict 333-10)	109
Golovin Bay (subdistrict 333-20)	110
Moses Point (subdistrict 333-30)	110
Norton Bay (subdistrict 333-40)	111
Shaktoolik (subdistrict 333-50)	112
Unalakleet (subdistrict 333-60)	112
Outlook for 1974	113
PORT CLARENCE DISTRICT	
Introduction	133
Commercial Fishery	133
Subsistence Fishery	133
Escapement	134
Discussion	135
KOTZEBUE DISTRICT	
District Boundaries	138
Commercial Fishery--Salmon	138
Commercial Fishery--Other Species	139
Subsistence Fishery--Salmon	139
Subsistence Fishery--Other Species	141
Escapement--Salmon	141
Outlook for 1974	141

INDEX TO FIGURES AND TABLES

AREA INTRODUCTION

Figure	1.	Arctic-Yukon-Kuskokwim area map	6
Table	1.	Summary of special projects	7

AREA SUMMARY

Table	2.	Arctic-Yukon-Kuskokwim area total salmon catch by district, 1973	12
Table	3.	1973 Arctic-Yukon-Kuskokwim area processors and associated data	13

APPENDIX TABLES

A. Table	1.	Arctic-Yukon-Kuskokwim total salmon catch, 1960-1973 . . .	18
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KUSKOKWIM DISTRICT

Table	4.	Kuskokwim district mileages	31
Table	5.	Kuskokwim district licenses issued by village and subdistrict, 1973	32
Table	6.	Commercial and subsistence salmon catches by species and subdistrict, 1973	33
Table	7.	Average weights (in pounds) of salmon taken in the Kuskokwim district commercial fishery, 1973	34
Table	8a.	Commercial salmon catches, lower Kuskokwim River (sub-district 335-10), all gear combined, 1973	35
Table	8b.	Commercial salmon catches, lower Kuskokwim River (stat. area 335-11), all gear combined, 1973	36
Table	8c.	Commercial salmon catches, lower Kuskokwim River (stat. area 335-12), all gear combined, 1973	37
Table	9.	Commercial salmon catches, middle Kuskokwim River (sub-district 335-20), all gear combined, 1973	38
Table	10.	Commercial catches of whitefish and sheefish, Kuskokwim district, 1973	39
Table	11.	Kuskokwim River subsistence salmon fishery data, 1973 . .	40
Table	12.	Commercial salmon catches from Quinhagak (subdistrict 335-40), all gear combined, 1973	41
Table	13.	Commercial salmon catches from Goodnews Bay (subdistrict 335-50), all gear combined, 1973	44
Table	14.	Aerial salmon escapement surveys in Kuskokwim district, 1973	47

APPENDIX TABLES

A. Table	2.	Kuskokwim district commercial and subsistence salmon catches, 1913-1973	48
A. Table	3.	Kuskokwim district commercial, vessel and gear licenses issued by subdistrict, 1960-1973	49

APPENDIX TABLES (continued)

A. Table 4.	Kuskokwim district commercial catches by drainage, 1960-1973	50
A. Table 5.	Total utilization of Kuskokwim River king salmon, 1960-1973	51
A. Table 6.	Comparable commercial king salmon catch data, Kuskokwim district, 1960-1973	52
A. Table 7.	Comparative commercial king salmon catch data by fishing period during the king salmon season, Kuskokwim River (subdistrict 335-10), 1965-1973	53
A. Table 8.	Comparable commercial coho salmon catch data, Kuskokwim district, 1960-1973	54
A. Table 9.	Comparative commercial coho salmon catch data by week, lower Kuskokwim River (subdistrict 335-10), 1965-1973	55
A. Table 10.	Commercial salmon pack by species in round weight, Kuskokwim district, 1964-1973	56
A. Table 11.	Dollar value estimates of Kuskokwim district commercial fishery, 1964-1973	57
A. Table 12.	Mean salmon weights and prices paid to fishermen, Kuskokwim district, 1964-1973	58
A. Table 13.	Comparative Kuskokwim River king salmon subsistence catches by village, 1960-1973	59
A. Table 14.	Comparative Kuskokwim River "other salmon" subsistence catches by village, 1960-1973	60
A. Table 15.	Comparative Kuskokwim River subsistence fishery data, 1960-1973	61
A. Table 16.	Comparative subsistence fishing data between families owning and not owning snowmachines, Kuskokwim River, 1967-1973	62
A. Table 17.	Quinhagak subsistence fishery data	63
A. Table 18.	Comparative Kuskokwim River drainage king salmon escapement counts	64

YUKON DISTRICT

Figure 2.	Subdistrict 334-10, Yukon district	76
Figure 3.	Subdistrict 334-20, Yukon district	77
Table 15.	Commercial salmon catches by species and subdistrict, Yukon district, 1973	78
Table 16.	Commercial salmon catches by species, subdistrict and gear, Yukon district, 1973	79
Table 17.	Yukon district commercial fishing licenses issued by residence, 1973	80
Table 18.	Commercial salmon catches by statistical area, during king salmon season, Yukon district, 1973	81
Table 19.	Commercial salmon catches by statistical area in subdistrict 334-10, during fall season, Yukon district, 1973	82
Table 20.	Commercial salmon catches from subdistrict 334-10, Yukon district, drift and set gill nets combined, 1973	83

YUKON DISTRICT (continued)

Table 21.	Commercial salmon catches from subdistrict 334-20, Yukon district, drift and set gill nets combined, 1973	85
Table 22.	Commercial salmon catches from subdistrict 334-30, Yukon district, drift and set gill nets combined, 1973	87
Table 23.	Yukon River subsistence salmon catch data, 1973 (includes Canadian catches)	88
Table 24.	Yukon River subsistence salmon fishery data from nonfishermen, 1973	89
Table 25.	Aerial survey salmon escapement counts, Yukon district, 1973	90

APPENDIX TABLES

A. Table 19.	Yukon district commercial and subsistence salmon catches, 1918-1973	92
A. Table 20.	Yukon district commercial, vessel and gill net licenses issued by subdistrict, 1960-1973	93
A. Table 21.	Commercial salmon catches by species and subdistrict, Yukon district, 1960-1973	95
A. Table 22.	Comparative commercial king salmon catch data, Yukon district, 1960-1973	96
A. Table 23.	King salmon catches by statistical areas, subdistrict 334-10 of the Yukon district, 1965-1973	97
A. Table 24.	Comparative commercial coho and chum salmon catch data for the fall season, subdistrict 334-10, Yukon district, 1961-1973	98
A. Table 25.	Commercial salmon pack by species and type of processing, Yukon district, 1960-1973	99
A. Table 26.	Dollar value estimates of Yukon district commercial fishery, 1960-1973	100
A. Table 27.	Estimated mean prices paid to fishermen, Yukon district, 1961-1973 (prices per fish)	101
A. Table 28.	Mean weights and numbers of salmon per case, Yukon district, 1962-1973	102
A. Table 29.	Yukon River comparative subsistence catch and effort data, 1961-1973 (numbers per fishing family are in parenthesis)	103
A. Table 30.	Comparative Yukon River drainage king salmon escapement counts, 1959-1973	104
A. Table 31.	Comparative Yukon River drainage chum salmon aerial survey escapement estimates, 1958-1973.	105

NORTON SOUND DISTRICT

Table 26.	Commercial salmon catches from Golovin Bay (subdistrict 333-20), Norton Sound district, set gill nets, 1973	114
Table 27.	Commercial salmon catches from Moses Point (subdistrict 333-30), Norton Sound district, set gill nets, 1973	115
Table 28.	Commercial salmon catches from Shaktoolik (subdistrict 333-50), Norton Sound district, set gill nets, 1973	116
Table 29.	Commercial salmon catches from Unalakleet (subdistrict 333-60), Norton Sound district, set gill nets, 1973	117

NORTON SOUND DISTRICT (continued)

Table 30.	Norton Sound district subsistence catches, 1973	119
Table 31.	Norton Sound district salmon escapement data, 1973	120

APPENDIX TABLES

A. Table 32.	Commercial and subsistence catches by species by subdistrict, Norton Sound district, 1961-1973	121
A. Table 33.	Vessel and gear licenses issued, Norton Sound district, 1961-1973	123
A. Table 34.	Comparative Norton Sound district commercial catch data, 1962-1973, subdistrict 333-20 (Golovin)	124
A. Table 35.	Comparative Norton Sound district commercial catch data, 1962-1973, subdistrict 333-30 (Moses Point)	125
A. Table 36.	Comparative Norton Sound commercial catch data, 1961-1973, subdistrict 333-60 (Unalakleet)	126
A. Table 37.	Commercial salmon pack by species and type of processing, Norton Sound district, 1961-1973	127
A. Table 38.	Dollar value estimates of Norton Sound district commercial fishery, 1961-1973	128
A. Table 39.	Mean weights and numbers of salmon per case, Norton Sound district, 1962-1973	129
A. Table 40.	Estimated prices paid to fishermen, Norton Sound district, 1962-1973 (prices per fish)	129
A. Table 41.	Comparative aerial survey counts of Norton Sound streams, 1961-1973	130

PORT CLARENCE DISTRICT

APPENDIX TABLES

A. Table 42.	Subsistence catches (all species) for Pilgrim River, Salmon Lake and Teller, 1963-1973	136
A. Table 43.	Comparative red salmon aerial survey counts and subsistence catches, Port Clarence, 1963-1973	137

KOTZEBUE DISTRICT

Table 32.	Commercial salmon catches from Kotzebue (district 331) set gill nets, 1973	142
Table 33.	Kotzebue district aerial surveys, 1973	143

APPENDIX TABLES

A. Table 44.	Commercial and subsistence salmon catches, Kotzebue district, 1914-1973	144
A. Table 45.	Kotzebue district commercial, vessel and set gill net licenses issued, 1960-1973	145
A. Table 46.	Comparative commercial chum salmon catch statistics, Kotzebue district, 1962-1973	146

KOTZEBUE DISTRICT (continued)

APPENDIX TABLES

A. Table 47.	Salmon pack by species and type of processing, Kotzebue district, 1962-1973	147
A. Table 48.	Dollar value estimates of Kotzebue district commercial fishery, 1962-1973	148
A. Table 49.	Mean weights and number of salmon per case, Kotzebue district, 1962-1973	149
A. Table 50.	Estimated mean prices paid to fishermen by species, Kotzebue district, 1962-1973 (price per fish)	150
A. Table 51.	Kotzebue district subsistence chum salmon catches, 1962-1973	151
A. Table 52.	Subsistence chum salmon catch per fisherman, Kotzebue district, 1962-1973	152
A. Table 53.	Subsistence and commercial sheefish catches, Kotzebue district, 1966-1973	153
A. Table 54.	Subsistence catches of Arctic char recorded for Kivalina and Noatak, 1959-1973	154
A. Table 55.	Comparative chum salmon aerial survey counts, Kotzebue district, 1960-1973	155

PREFACE

This report presents all available information concerning the management of commercial and subsistence fisheries in the Arctic-Yukon-Kuskokwim Area. Although data from many special research projects are included in this report, complete documentation of these projects and results will be presented in separate reports.

The A-Y-K area was given regional status in 1971 with the result that all districts are now areas. This report utilizes the old nomenclature, i.e., A-Y-K area, Kuskokwim district, etc.

Data presented in this report supercedes information found in previous management reports. An attempt has been made to correct errors in previous reports and previously unrecorded data have been incorporated into this report which are so indicated by appropriate footnotes.

The report is organized into the following major sections:

1. Area Introduction. This is a general and brief description of the area, inhabitants, fishery resources, fisheries and management practices.
2. Area Summary. This section summarizes current year data for the area and makes comparisons with previous years.
3. District Reports. There are several unique and separate fishing districts in the area and separate comprehensive reports are presented for each.

In order to facilitate use of this report, the tabular data has been separated into current year tables and appendix tables where annual comparisons are made. The text for each major section is followed by current year tables and then by appendix tables.

The following is an explanation of how effort and catch per unit effort data, presented throughout this report, have been derived. Boat (or fisherman) hours is computed by arbitrarily assuming that if a fishing boat delivers in any 24 hour fishing period, it fished the entire period. If the period was more than 24 hours long, then the vessel is assumed to have fished the complete period for as many hours as was open to commercial fishing.

Catch per fisherman (or boat) hour is obtained by dividing the total fisherman hours into the catch for the corresponding period of time.

Total fishermen (or boats) is the total number of fishermen making deliveries, irrespectively of how many deliveries made or days fished during a particular "season." There are a number of fishermen who deliver only once or twice during the entire season.

"Total days fished" is the total number of hours open for commercial fishing during the season divided by 24.

AREA INTRODUCTION

Boundaries

The Arctic-Yukon-Kuskokwim Area, as shown in Figure 1, is that portion of the State north of the Alaska Range and the Bristol Bay drainage. It includes all of the drainages of the Bering Sea and the Arctic Ocean from Cape Newenham to Demarcation Point at the Canadian border. In addition it includes the following Bering Sea Islands: Nunivak, St. Lawrence and St. Matthew. This is the largest management area in the State comprising over 400,000 square miles which is equal to the combined areas of California, Oregon, Washington and Idaho.

Fishery Resources

All five species of Pacific salmon are indigenous to the area with chum salmon being the most abundant. It is estimated that pink salmon, king salmon, coho salmon and red salmon follow in order of abundance.

Chum and pink salmon are found throughout the area although these species become relatively scarce north of the Kotzebue Sound drainage. Chum and pink salmon have been found as far north as Barrow and in the Beaufort Sea adjacent to the mouth of the Colville River. The largest spawning runs of king salmon occur from Cape Newenham to Norton Sound. King salmon are uncommon north of the Shaktoolik River in Norton Sound but have been found as far north as the Wulik River located about 100 miles northwest of Kotzebue. The greatest coho salmon runs occur in the Kuskokwim district. Red salmon are common in the Kuskokwim district and a small population exists in Salmon Lake on the Seward Peninsula. Occurrence of this species is very rare in the other districts.

Other species common to the freshwater and coastal marine habitats are: Sheefish, several species of whitefish, Arctic char, lake trout, rainbow trout, grayling, burbot, suckers, sculpins, blackfish, sticklebacks, lampreys, smelt, herring and several species of cods, flatfishes, crabs, shrimps and mollusks.

Water Quality

Water quality and spawning habitats in the area have been largely preserved in their original condition because pollution, logging and dam construction activities have been minimal or nonexistent. It remains to be seen what impact the recent oil development activity will have on water quality and fishery resources in the area.

Commercial Fishing

The relatively recent development and expansion of the commercial salmon fishery has enabled many area residents to obtain a cash income when other employment is often sporadic or nonexistent. Although commercial salmon fishing

in the area dates back to 1913, the only district having a sustained fishery prior to statehood (1959) was the Yukon district. In 1959 and 1960 Department biologists conducted reconnaissance surveys which indicated that harvestable surpluses of salmon were available in several districts that were not being commercially fished. The Department then liberalized certain regulations and encouraged processors to explore and develop new fishing grounds. As a result sustained commercial salmon fisheries have been developed in the Kuskokwim, Norton Sound and Kotzebue districts. Even as late as 1968, a completely new salmon commercial fishery was initiated in Goodnews Bay, which is located just south of the Kuskokwim River mouth.

Nearly all of the area's commercial fishermen are resident Eskimos and Indians as are the vast majority of processing plant workers. Depending on the district being fished, commercial fishermen operate set and drift gill nets to capture salmon although a few fishwheels are still used in the upper Yukon River. Most fishermen operate small inexpensive skiffs powered with outboard motors. In the Yukon and Kuskokwim districts commercial fishing is prohibited outside the river mouths with the exception of two small marine fisheries in Kuskokwim Bay. In the Norton Sound and Kotzebue districts, all commercial salmon fishing is done in the coastal marine waters.

The decline in subsistence utilization of salmon has made it possible to increase commercial utilization in some districts during recent years. Also, there has been an increased demand from Japanese markets for fresh frozen and cured A-Y-K salmon, especially chums. These trends are expected to continue, which should result in a moderate increase in production and economic value of the commercial fishery over the next few years.

Subsistence Utilization

There are approximately 30,000-40,000 Eskimo and Indian people in the area, the majority of which reside in excess of 110 small villages scattered along the coast and the major river systems. Nearly all of these native people are dependent to varying degrees on the fish and game resources for their livelihood.

Subsistence fishermen operate gill nets in the main rivers and to a lesser extent in the coastal marine waters to capture mainly salmon, whitefish and sheefish. Fishwheels take considerable number of salmon in the Yukon and Kuskokwim Rivers. Beach seines are occasionally used near the spawning grounds to catch schooling or spawning salmon as well as several other species of fish. Traps and fish weirs of various designs are also used, mainly in the fall and winter months, to capture whitefish, sheefish, blackfish and burbot. Sheefish, pike, char, tomcod and king crab are frequently taken through the ice by hand-lines.

Compared to commercially caught fish there is very little wastage of any portion of the fish taken for subsistence purposes. The major portion of the fish is sundried or smoked for later consumption while the head and viscera are usually fed to sled dogs.

The Department has conducted annual surveys of the important subsistence salmon fisheries since the early 1960's. During this period the recorded annual subsistence harvests have ranged between 580,000 to 850,000 salmon. The majority of salmon taken are chums. Subsistence harvest information prior to 1960 is incomplete or entirely lacking for many years, but there are some records indicating that in excess of two million salmon were taken in some years during the early 1900's.

About 1930 the airplane began replacing the sled dog as mail carrier, and this started the gradual decline of the subsistence salmon fishery. This decline has been accelerated in the past few years as increased welfare payments and employment opportunities, including commercial fishing activities, have become available to the native people. Another very important factor tending to affect subsistence fishing effort during recent years is the increasing use of snow vehicles which may be replacing sled dogs at a faster rate than did the airplane. Since considerable numbers of salmon and other fish are fed to sled dogs, fewer fish will be required for subsistence purposes as the canine population declines. The decline in subsistence fishing is not related necessarily to fish abundance, but mainly reflects decreases in effort and dependence due to a changing way of life.

Management

The Division of Commercial Fisheries of the Alaska Department of Fish and Game is responsible for the management of commercial and subsistence fisheries in this vast area. The permanent staff assigned to this area includes five positions--regional supervisor, three area management biologists and one research biologist. In addition from 25 to 30 summer employees are hired each season to assist the permanent staff in conducting various management and research studies.

Operating expenses for the A-Y-K area management and research program from July 1, 1972, through June 30, 1973, were approximately \$257,500. Of this total, state and federal funds provided \$196,100 and \$61,400 respectively.

The main objective of the Department's program is to manage the commercial salmon fisheries on a sustained yield basis in addition to obtaining needed information to determine the potential for commercial fisheries on underutilized species such as herring, char and whitefish. Present commercial salmon fishing regulations are still relatively restrictive in order to insure that sufficient salmon are provided for subsistence fishery and spawning ground requirements.

The basic regulation that governs the commercial salmon harvest in all districts is the scheduled weekly fishing period. Commercial fishing is normally allowed for a total of from two to four days a week during the open season which depends on the district and species involved. The fishing effort usually occurs

during the entire run and not just during any particular segment of the run. Occasionally more or less fishing time is allowed, depending upon fishing conditions and the strength of the runs or spawning escapements as determined by special studies conducted by the Department.

Due to the vast size of the area and the silty characteristics of many streams, accurate estimates of the size of salmon runs and the spawning escapements are difficult to obtain. Fishery management is also hampered by the relative lack of comparative catch and return information since all the fisheries were either initiated or expanded through regulation changes only since 1961 or 1962. The management problem is further compounded by having to provide sufficient escapement after commercial fishing for the important subsistence fishery as well as for spawning purposes.

For these reasons the present commercial fishery is still considered to be somewhat experimental in nature. It has been a policy of the Alaska Department of Fish and Game to maintain recent levels of commercial utilization for a few years in order to establish definite trends in subsistence utilization and to obtain more information on the relationship between the salmon catch and return.

If there is no apparent change in run size, it is the Department's policy to increase commercial utilization once trends in declining subsistence utilization can be established. It should be pointed out that increases in commercial fishing efficiency are expected in some districts and may balance any immediate decline in subsistence utilization with the result that present regulations will be maintained or even made more restrictive.

A unique problem in the area is the so-called language barrier. Many of the older native people cannot read or speak English. Therefore, the staff must use translators when conducting the many public meetings that are annually conducted throughout the area. In addition many special regulation notices are distributed in both the English and Eskimo languages. While it may normally take only half an hour or so to conduct a public meeting or hearing in English, it usually takes two to three times that long when Eskimo translators are used. To assist in the education and information program, a weekly fishery program is broadcasted during the fishing season over radio station KICY in Nome. This broadcast reaches most area fishermen.

Special Studies

Table 1 lists special studies undertaken during 1973 and includes a summary of objectives, procedures and results for each.

Table 1. Summary of special projects conducted in the Arctic-Yukon-Kuskokwim Region by the Division of Commercial Fisheries, 1973.

1. Kuskokwim River Test Fishing

- a. Location: Kwegooyuk on the east bank of the mouth of the Kuskokwim River located 56 river miles downstream from Bethel.
- b. Objectives: Determine run timing and relative abundance of king, red and chum salmon.
- c. Results: A total of 577 king, 33 red and 675 chum salmon was taken in set gill nets fished from June 1 through July 15. The king salmon run was below-average magnitude and peaked about June 20. Based on comparative catch data, the chum salmon run was above average and peaked from late June to early July.

2. Yukon River Test Fishing

- a. Location: Flat Island in the south mouth of the Yukon River.
- b. Objectives: Determine run timing and relative abundance of king and summer chum salmon in the south mouth channel of the Yukon River.
- c. Results: A total of 789 king and 1,067 chum salmon was taken in the index set gill nets from June 5 through July 13. Peak migrations for king salmon occurred during June 15-18, June 24-25 and June 28. Peaks in the summer chum salmon migration occurred during June 16-18 and June 23-26 and July 4-7. Based on comparative catch comparisons, the 1973 king salmon run was below average in magnitude. The 1973 chum salmon run was average in magnitude.

3. Subsistence Salmon Fishery Surveys

- a. Location: Kuskokwim River, Yukon River, Norton Sound, Port Clarence and Kotzebue Sound.
- b. Objectives: Determine subsistence utilization of salmon and fishing effort needed for formulating future management procedures and goals, also, collect tag recoveries from high seas and Department tagging programs.
- c. Results: A total of 1,321 fishing families was surveyed and their catches totaled 64,402 king salmon and 441,589 other salmon. A total of 2,500 river miles was traveled by boat and 1,500 air miles by single-engine aircraft in the conduct of the survey.

4. Kogruluk River Counting Tower

- a. Location: Mouth of the Kogruluk River, tributary to the Holitna River (Kuskokwim River system).
- b. Objectives: Determine daily and seasonal timing and magnitude of all species of salmon entering this stream; sample for age, sex and size information.
- c. Results: A total of 1,725 king salmon, 5,327 chum salmon and 205 red salmon was counted passing the tower site. This represented the smallest escapement ever recorded at the site. The king run peaked in mid-July; the chums peaked in mid- to late July; and red salmon peaked during late July. Hourly migration patterns were similar to

Table 1. (continued) Summary of special projects conducted in the Arctic-Yukon-Kuskokwim Region by the Division of Commercial Fisheries, 1973.

previous years with peaks occurring in the afternoon and about midnight. An aerial survey performed on August 2 accounted for only 35 percent of the king salmon count above the tower.

5. Kwiniuk River Counting Tower

- a. Location: About five miles upstream from the mouth of the Kwiniuk River in Norton Sound; located about 100 miles east of Nome.
- b. Objectives: Determine daily and seasonal timing and magnitude of chum and pink salmon runs, also to determine accuracy of aerial survey counts.
- c. Results: A total of 28,029 chum, 37,070 pink and 57 king salmon was counted past the tower. The king salmon escapement of 57 was the second highest recorded since 1965 with the chum and pink salmon escapements 18 percent and 40 percent below the previous eight-year average respectively.

6. Yukon River Anadromous Fish Investigations

- a. Location: Yukon River drainage.
- b. Objectives: Develop estimates or indices of the magnitude and quality of king and chum salmon escapements, determine size and effect of commercial and subsistence harvest on various stocks of king and chum salmon, plus relate collected data to long-term trends in the salmon stocks evaluating management procedures needed to maintain them at their level of maximum yield.
- c. Results: An estimated 71,475 chum and 517 king salmon were enumerated past the Anvik River counting tower in 1973. An experimental salmon enumeration project was initiated on the Salcha River. This project was not entirely successful because of extended periods of high water. An intensive fall chum salmon study program was initiated on the Delta River. A Petersen mark and recapture project yielded an estimate of 10,262 fall chums in the Delta River in 1973. A king salmon smolt outmigration study was conducted on the Salcha River in May and June of 1973. Over 694 king salmon smolt were captured. Important information on freshwater residency, growth and outmigration timing was obtained.

Index streams in the Yukon River drainage were surveyed to obtain information on magnitude of escapement. Extensive exploratory surveys were flown in the Tanana, Porcupine and Chandalar Rivers drainages to locate and enumerate fall chum salmon spawning concentrations. Four new fall chum salmon spawning areas were located. An estimated 228 king salmon passed through the Whitehorse Dam fishway in 1973. Test fishing gill nets were operated at Flat Island to obtain advance information on run timing, magnitude and composition.

The age and sex composition of the 1973 salmon run were sampled at several locations on the Yukon River and its tributaries. A sub-

Table 1. (continued) Summary of special projects conducted in the Arctic-Yukon-Kuskokwim Region by the Division of Commercial Fisheries, 1973.

sistence catch survey was made along the Yukon River and it was determined that a minimum of 22,215 king salmon and 186,179 salmon of other species was taken in 1973.

7. Norton Sound Anadromous Fish Investigations

- a. Location: Unalakleet River
- b. Objectives: Use tagging studies to determine migrational pattern and timing of salmon in Norton Sound; develop estimates or indices of the magnitude and quality of king, chum and pink salmon in the Unalakleet River system by use of tagging studies and a counting tower on the North River. Determine the size and effect of the commercial and subsistence harvest on various stocks of salmon and relate these data to long-term trends in the salmon stocks. Develop management procedures based on data collected to maintain salmon harvest at the level of optimum sustained yield.
- c. Results: A total of 1,217 pink, 513 chum and 4 king salmon was tagged and released in the Unalakleet above the North River-Unalakleet River confluence. Subsequent tag recoveries yielded Petersen population estimates of 29,998 pink; 21,679 chum and 1,092 king salmon.

An estimated total of 26,542 pink, 4,334 chum and 298 king salmon migrated past the North River tower in 1973, the second year of operation. Estimates of the age composition of the king salmon run, based upon visual estimates in length resulting in 32.5 percent, 4₂; 21.5 percent, 5₂; 26.5 percent, 6₂; and 19.4 percent 7₂ aged fish. The Unalakleet commercial catch in 1973 totaled 1,397 king; 13,335 pink and 25,716 chum salmon. Commercial catch sampling of chum salmon indicated 4.7 percent, 52.5 percent and 42.8 percent were age 3, 4 and 5 fish.

8. Upper Yukon River Salmon Investigations

- a. Location: Upper Yukon River from Ruby to Fort Yukon, including Koyukuk and Tanana Rivers.
- b. Objectives: Obtain accurate commercial catch information in addition to collecting age, sex and size data and tag recoveries; distribute information regarding licensing and regulations.
- c. Results: A temporary Fish and Game Technician IV stationed in Fairbanks made several trips during the season to important villages in the area. The commercial catch consisted of 1,309 kings and 13,003 chums. Several king salmon were sampled for age, sex and size data.

9. Commercial Salmon Catch Sampling

- a. Various Locations: In all districts
- b. Objectives: Obtain age, sex and size information for commercially caught fish.

Table 1. (continued) Summary of special projects conducted in the Arctic-Yukon-Kuskokwim Region by the Division of Commercial Fisheries, 1973.

- c. Results: Several thousand samples of all species were taken in 1973. This information has been tabulated and analyzed and will be presented in subsequent separate reports.

10. Kuskokwim River Whitefish Investigations

- a. Location: Kuskokwim River drainage
- b. Objectives: Determine whitefish taxonomy, movements, locations of spawning areas and age, sex and size compositions of various populations.
- c. Results: A report is being prepared in which all tagging and age, sex and size studies will be summarized; taxonomic studies indicate the need for a standardized method of collecting meristical count data to distinguish species and stocks of whitefish.

AREA SUMMARY, 1973

Commercial Fishery

Table 2 presents commercial catches by district for the 1973 season. The total area catch included 128,650 kings, 5,224 reds, 198,331 cohos, 47,234 pinks and 1,196,671 chums totaling 1,576,110 salmon.

Appendix Table 1 compares the area commercial catches during the 1960-1973 period. The 1973 harvest of chum and coho salmon and all species combined was the greatest ever recorded.

Table 3 is a list of 1973 buyers and processors, showing associated processing information for each.

During 1973 approximately \$3,279,210 was paid to fishermen for salmon deliveries. Wages earned by processing plant employees, tenderboat operators, etc., added another estimated \$1,091,000 to the economy of this area.

Subsistence Fishery

In 1973 a minimum total of 64,424 kings and 443,721 other salmon, mostly chums, was taken by 1,321 fishing families. Table 2 shows subsistence catches by district for 1973 and Appendix Table 1 compares area catches made during the 1960-1973 period.

Total Utilization

A minimum total of 2,084,255 salmon of all species was harvested by both commercial and subsistence fishermen in 1973. This was the largest utilization recorded for the 1960-1973 period.

Table 2. Arctic-Yukon-Kuskokwim area total salmon catch by district, 1973

	Kings	Reds	Cohos	Pinks	Chums	All species
Kuskokwim:						
Commercial	51,374	5,224	152,408	634	184,207	393,847
Subsistence	<u>41,697</u>				<u>211,468</u> 1/	<u>253,165</u>
Subtotal	93,071	5,224	152,408	634	395,675	647,012
Yukon:						
Commercial	75,353		36,641	101	517,934	630,029
Subsistence	<u>22,313</u>				<u>188,524</u> 1/	<u>210,837</u>
Subtotal	97,666		36,641	101	706,458	840,866
Norton Sound:						
Commercial	1,918		9,282	46,499	119,098	176,797
Subsistence	<u>392</u>		<u>520</u>	<u>14,770</u>	<u>7,185</u>	<u>22,867</u>
Subtotal	2,310		9,802	61,269	126,283	199,664
Port Clarence:						
Commercial						
Subsistence	<u>22</u>	<u>46</u>	<u>280</u>	<u>424</u>	<u>1,562</u>	<u>2,334</u>
Subtotal	22	46	280	424	1,562	2,334
Kotzebue						
Commercial	5				375,432	375,437
Subsistence					<u>18,942</u>	<u>18,942</u>
Subtotal	5				394,374	394,379
Grand total of A-Y-K Area:						
Commercial	128,650	5,224	198,331	47,234	1,196,671	1,576,110
Subsistence	<u>64,424</u>	<u>46</u>	<u>800</u>	<u>15,194</u>	<u>427,681</u>	<u>508,145</u>
Total	193,074	5,270	199,131	62,428	1,624,352	2,084,255
Totals, 1972	216,431	5,514	52,179	62,149	950,547	1,286,820
Totals, 1971	229,379	7,430	38,835	17,285	1,047,618	1,340,547
Totals, 1970	235,510	13,242	96,575	119,955	1,208,241	1,673,523
Totals, 1969	214,606	10,490	179,774	107,348	852,769	1,364,987
Totals, 1968	201,319	6,572	177,014	185,815	666,172	1,236,892

1/ Mostly chum salmon, but includes some red, coho and pink salmon.

Table 3. 1973 Arctic-Yukon-Kuskokwim area processors and associated data.

Commercial operator	Product	Average price paid to fishermen (estimated)	District
Kotzebue Sound Area Fishery Co-op Box 270 Kotzebue, Alaska	Fresh salmon Fresh sheefish, char	.25 per lb. .30 per lb.	Kotzebue
Hansons Trading Co. Box 47 Kotzebue, Alaska	Fresh sheefish Fresh char Fresh whitefish	.30 per lb. .30 per lb. .20 per lb.	Kotzebue
Peninsula Fisheries Co. 1402 K Street Anchorage, Alaska	Frozen salmon Kings Cohos Pinks Chums	.40 per lb. .16 per lb. .14 per lb. .32 per lb.	Norton Sound and Kotzebue
Northern Commercial Co. Nome, Alaska	Fresh & frozen salmon Chums	-	Norton Sound
Northern Commercial Co. Unalakleet, Alaska	Fresh & frozen char	.35 per lb.	Norton Sound
Northern Commercial 419 Colman Building Seattle, Washington	Mild cured, hard salt & frozen Kings Cohos Chums Salmon roe	.30 per lb. .18 per lb. .155 per lb.	Yukon Subdistrict 1
Peter E. Merry 1206 Coppet Fairbanks, Alaska	Fresh & frozen Kings Frozen Chums	.50 per lb. .20 per lb.	Yukon Subdistrict 4
Sterling True Nenana, Alaska	Frozen salmon King Chums Salmon roe	<u>1/</u>	Yukon Subdistrict 4

Table 3. (continued) 1973 Arctic-Yukon-Kuskokwim Region processors and associated data.

Commercial operator	Product	Average price paid to fishermen (estimated)	District
Billy Captain Ruby, Alaska	Smoked salmon Kings Chums	<u>1/</u>	Yukon Subdistrict 4
Arctic Diving & Salvage Charles Anderson 1321 Karen Street Fairbanks, Alaska	Fresh salmon Kings Chums Salmon roe	<u>1/</u>	Yukon Subdistrict 4
Henry Ketzler Box 35 Nenana, Alaska	Smoked chum and king salmon	<u>1/</u>	Yukon Subdistrict 4
Gurtler Enterprises 4461 Woodriver Drive Fairbanks, Alaska	Smoked king salmon	<u>1/</u>	Yukon Subdistrict 4
Paul Beard Tanana, Alaska	Fresh king salmon Fresh chum salmon	.40 per lb. 1.00 each	Yukon Subdistrict 4
Bering Sea Fisheries, Inc. Rt. 2, Box 252 Everett, Washington	Frozen salmon (in round) & canned (#1 tails) Kings Chums Cohos Salmon roe	.30 per lb. .155 per lb. .18 per lb.	Yukon Subdistrict 1
John Amukon Scammon Bay, Alaska	Hard salt kings	6.50 each	Yukon Subdistrict 1
Yukon Delta Fish Marketing Co-op, Inc. Emmonak, Alaska	Frozen Kings Cohos Chums Salmon roe	.30 per lb. .16 per lb. .15 per lb.	Yukon Subdistrict 1

Table 3. (continued) 1973 Arctic-Yukon-Kuskokwim Region processors and associated data.

Commercial operator	Product	Average price paid to fishermen (estimated)	District
King Island Fisheries William Willoya 1433 Muldoon Anchorage, Alaska	Fresh & Frozen salmon Kings Cohos Pinks Chums Salmon roe	.35 per lb. .18 per lb. .10 per lb. .18 per lb.	Yukon Subdistricts 1 & 2
Mountain Village Fish Co. Mountain Village, Alaska	Canned #1/2 flats, Hard Salt, Frozen Kings Chum Salmon roe	.35 per lb. .18 per lb.	Yukon Subdistricts 1 & 2
Nenana Reefer & Processing Box 26 Nenana, Alaska	Frozen salmon Kings Chums Salmon roe	.60 per lb. .20 per lb.	Yukon Subdistrict 4
Mildred Kozevnikoff Tanana, Alaska	Fresh king salmon	.40 per lb.	Yukon Subdistrict 4
Waller Enterprises Box 72 Eagle, Alaska	Fresh king salmon	.50 per lb.	Yukon Subdistrict 4
Josef Schruf 1-3/4 mile Goldstream Road Fairbanks, Alaska	Fresh Fish King salmon Coho salmon Chum salmon Whitefish Sheefish	.60 per lb. .50 per lb. .40 per lb. .20 per lb. .40 per lb.	Yukon Subdistrict 4
Arnold Akers Chuloonawick, Alaska (via Kotlik, Alaska)	Mild cure & fresh frozen Kings Chums	.30 per lb. .15 per lb.	Yukon Subdistrict 1

Table 3. (continued) 1973 Arctic-Yukon-Kuskokwim Region processors and associated data.

Commercial operator	Product	Average price paid to fishermen (estimated)	District
Delta Development Corp. Larry Ledlow Box 131 St. Marys, Alaska	Fresh salmon Kings Chums	.30 per lb. .18 per lb.	Yukon Subdistrict 3
Holy Cross Trading Co. Harry Turner Holy Cross, Alaska	Smoked salmon strips Kings	<u>1/</u>	Yukon Subdistrict 3
Lena Aloysius Holy Cross, Alaska	Smoked salmon strips Kings	<u>1/</u>	Yukon Subdistrict 3
Clark Fishing Enterprises Box 517 Aniak, Alaska	Fresh dressed Kings Chums	.30 per lb.	Yukon Subdistrict 3 Kuskokwim Subdistrict 2
J. Bruce Crow & Sons Box 37 Bethel, Alaska	Fresh dressed Kings Red Coho Chum Pink	8.00 each 1.25 each 1.50 each 1.25 each .75 each	Kuskokwim Subdistricts 1 & 2
Kemp-Paulucci Bethel, Alaska	Frozen King Coho Chum Pink Fresh Salmon roe	8.00 each 1.50 each 1.25 each .75 each	Kuskokwim Subdistrict 1
Schenk Seafood Sales, Inc. 1680 Toad Lake Road Bellingham, Washington	Fresh dressed King Coho Chum Pink Cured Salmon roe	8.00 each 1.50 each 1.25 each .75 each	Kuskokwim Subdistrict 1,4,5

Table 3. (continued) 1973 Arctic-Yukon-Kuskokwim Region processors and associated data.

Commercial operator	Product	Average price paid to fishermen (estimated)	District
Todiak Fisheries, Inc. 614 Lowman Building Seattle, Washington	Frozen King Red Cohos Pinks Chums	.30 per lb. .35 per lb. .20 per lb. .12 per lb. .16 per lb.	Kuskokwim Subdistrict 1,4,5
Kuskokwim Inn Cafe Box 122 Bethel, Alaska	Fresh King	.37 per lb.	Kuskokwim Subdistrict 1
Seafoods of Alaska Box 445 Bethel, Alaska	Frozen King Red Coho Pink Chum Fresh Salmon roe	8.00 each 2.00 each 1.50 each .75 each 1.25 each <u>1/</u>	Kuskokwim Subdistrict 1,4
Alaska Marine Resources Box 129 Togiak, Alaska	Kings Reds Pink Chums	.34 per lb. .36 per lb. .17 per lb. .19 per lb.	Kuskokwim Subdistrict 5
Larry's Elegant Moose Box 426 Bethel	Kings	<u>1/</u>	Kuskokwim Subdistrict 1
James A. Charles Tuntutuliak	Kings Cohos Chums	9.00 each 1.50 each 1.25 each	Kuskokwim Subdistrict 2
Jack Turinsky 210 W. 5th Anchorage, Alaska	Kings Chums	<u>1/</u> <u>1/</u>	Kuskokwim Subdistrict 2

1/ Information not available

Appendix Table 1. Arctic-Yukon-Kuskokwim total salmon catch, 1960-1973.

Year	Commercial catch					Subsistence catch			
	King	Red	Coho	Pink	Chum	Total	King	Other salmon ^{1/}	Total
1960	73,560	5,649	5,498			84,707	19,457	337,067	356,524
1961	148,741	2,308	21,752	34,443	109,657	316,901	52,617	593,115	645,732
1962	122,907	10,415	45,094	37,666	412,168	628,250	33,506	622,858	656,364
1963	142,185	38	37,994	56,031	209,234	445,482	67,271	593,584	660,855
1964	116,835	13,548	31,536	14,511	234,415	410,845	54,235	757,734	811,969
1965	144,512	1,886	14,571	220	104,388	265,577	45,376	800,371	845,747
1966	120,692	1,137	47,994	13,177	186,016	369,016	63,576	473,926	537,502
1967	161,496	654	71,646	29,052	128,329	391,177	81,832	600,306	682,138
1968	150,728	5,884	174,490	146,997	162,661	640,760	50,591	545,541	596,132
1969	157,392	10,362	132,290	88,248	384,367	772,659	57,214	535,114	592,328
1970	147,204	12,654	78,913	92,330	673,988	1,005,089	88,306	580,128	668,434
1971	158,037	6,054	25,336	4,908	675,425	869,760	71,342	399,445	470,787
1972	152,720	4,312	46,567	47,134	655,625	906,358	63,711	316,751	380,462
1973	128,650	5,224	198,331	47,234	1,196,671	1,576,110	64,424	443,721	508,145

Year	Total catch					Total
	King	Red	Coho	Pink	Chum ^{2/}	
1960	93,017	5,649	5,498		337,067	441,231
1961	201,358	2,308	21,752	34,443	702,772	962,633
1962	156,413	10,415	45,094	37,666	1,035,026	1,284,614
1963	209,456	38	37,994	56,031	802,818	1,106,337
1964	171,070	13,548	31,536	14,511	992,149	1,222,814
1965	189,888	1,886	14,571	220	904,759	1,111,324
1966	184,268	1,137	47,994	13,177	659,942	906,518
1967	243,328	654	71,646	29,052	728,635	1,073,315
1968	201,319	5,884	174,490	146,997	708,202	1,236,892
1969	214,606	10,362	132,290	88,248	919,481	1,364,987
1970	235,510	13,242	96,575	119,955	1,208,241	1,673,523
1971	229,379	7,430	38,835	17,285	1,047,618	1,340,547
1972	216,431	5,514	52,179	62,149	950,547	1,286,820
1973	193,074	5,270	199,131	62,428	1,624,352	2,084,255

^{1/} Majority are chum salmon but some red, coho and pinks.^{2/} Subsistence catch of "other salmon" included under total chum salmon catch.

YUKON DISTRICT

DISTRICT AND SUBDISTRICT BOUNDARIES

This district includes all waters of the Yukon River and its tributary streams in Alaska and all coastal waters from Cape Stephens, including Stuart Island, southward to 62° North Latitude (Figure 1). The Yukon River is the largest river in Alaska, draining approximately 35 percent of the state, and is the fifth largest in North America. It originates in British Columbia, Canada, within 30 miles of the Gulf of Alaska and flows over 2,300 miles to its mouth on the Bering Sea draining an area of approximately 330,000 square miles. With the possible exception of a few fish taken at the mouth or adjacent coastal villages, only salmon of Yukon River origin are harvested in this district.

The present subdistrict boundaries were established in 1961 and 1962. The commercial fishing area is divided into four subdistricts for management and regulatory purposes: subdistrict 334-10 (mouth to Anuk River including Black River); subdistrict 334-20 (Anuk River to Owl Slough near Marshall); subdistrict 334-30 (Owl Slough to the mouth of the Koyukuk River); and subdistrict 334-40 (the remaining drainage upstream of the mouth of the Koyukuk River). These subdistricts are further subdivided into statistical areas for management and research purposes (Figures 2 and 3).

COMMERCIAL FISHERY

Introduction

The first recorded commercial salmon harvest in the drainage dates back to 1903 when 70,000 pounds of king and chum salmon were taken in Yukon Territory, Canada. A small commercial fishery for these species still exists in Yukon Territory, primarily at Dawson.

The first recorded commercial salmon harvest in Alaska was in 1918 when Carlisle Packing Company operated a floating cannery at Andreafsky (now St. Marys). Relatively large catches of king, coho and chum salmon were made during the first four years of this fishery (Appendix Table 19). Since restrictions were placed only on commercial fishing inside the river's mouth, a majority of the catch was made in "outside" waters. Because of the existence of a large upriver subsistence fishery, the early commercial fishery met considerable opposition and was closed completely during 1925-1931. Commercial fishing for king salmon was resumed at a much lower level in 1932, and this species has been taken commercially each year since then. Since 1921, commercial catches of chum and/or coho salmon have been made only during 1952-54, 1956 and since 1961.

Since the 1950s commercial salmon fishing has been permitted only upstream from the mouth of the Yukon and Black Rivers. During the 1954-1960 period, a 65,000 king salmon quota was in effect for the river. Of this total, not more than 50,000 could be taken below the mouth of the Anuk River, 10,000 in the area between the mouths of the Anuk and Anvik Rivers and 5,000 above the Anvik River. During these years, fishing was allowed for five and one-half days a week until the specific quotas were obtained.

King salmon catch quotas were eliminated for subdistricts 334-10 and 334-20 in 1961 and these fisheries have been regulated by scheduled weekly fishing periods since then. The king salmon season in these two subdistricts opens June 1 and is closed by emergency order by late June or early July depending on the timing and magnitude of the runs. Fishing time during this season was allowed for four days a week during 1961-1967, but was reduced to 3 1/2 days a week beginning in 1968. This was done to insure that adequate king salmon escapements would be realized in the face of increasing fishing effort and efficiency.

Commercial fishing in subdistrict 334-30 is allowed for a total of four days a week until quotas of 3,000 king and 3,000 chum and coho salmon combined are taken. In subdistrict 334-40 fishing is allowed seven days a week until quotas of 2,000 king and 2,000 chum and coho salmon combined are taken. These quotas have been established for the purpose of allowing a very limited commercial utilization which traditionally has occurred for many years.

Since 1961 the commercial fishing season in the lower Yukon subdistricts has been reopened for four days a week following the closure of the king salmon season. This second season is referred to as the "fall season" and primarily fall chum and coho salmon are taken. Opening dates for the fall season have ranged from July 5 to August 3 and the season ends in late August or early September when buyers terminate their operations. The mid-season closure during July and often including late June was initially for the purpose of insuring an adequate supply of summer chum salmon for upriver subsistence fishermen. Also, this closure provides protection for the late stages of the king salmon run. However, subsistence fishing for summer chums has declined in recent years and the Department has liberalized regulations to provide for an earlier opening in July to harvest the surplus. Beginning with the 1973 fishing season, a maximum mesh size regulation of six inches or less stretched measure after July 4 in subdistricts 334-10 and 334-20 was promulgated.

Excluding the 1920s, the sale of other species of salmon captured during the king salmon season in the area of the present lower two subdistricts has been allowed only since 1967. The incidental catch of summer chum salmon was limited during this season as fishermen used gill nets of stretched mesh measure of eight inches or greater. However, beginning in 1970, each fisherman could substitute up to 50 fathoms of gill net of any mesh size in subdistricts 334-10 and 334-20. All mesh size restrictions were lifted during the king salmon season (from June 1 through early July) beginning with the 1973 season in order to allow greater opportunity to use small mesh nets which are selective toward the more abundant chums. However, the greater majority of fishermen continue to fish with mainly the larger mesh king salmon nets.

Set gill nets, drift gill nets and fishwheels are legal forms of commercial fishing gear and a fisherman can operate or assist only one type of gear at any one time. Set gill nets in use by any individual fisherman cannot exceed 150 fathoms in length and drift gill nets cannot exceed 50 fathoms. An individual may have in operation not more than one fishwheel at any one time. Set gill nets are most commonly used, especially near the river mouth, but the use of drift gill nets is increasing each season. Most fishermen operate small outboard powered skiffs of 16 to 20 feet in length and do not use gill net rollers, power reels, etc., of any type. Finally, subsistence fishing is prohibited during the closed fishing periods of the commercial fishing seasons in the lower two subdistricts.

Appendix Table 21 presents commercial catches for each subdistrict since 1960.

1973 District Summary

In 1973 there were 75,353 kings; 36,641 cohos; 517,934 chums; 101 pinks totaling 630,029 salmon taken commercially. This was the largest harvest ever recorded for chum salmon and also for all species combined. The total 1973 salmon catch exceeded the previous record total catch of 469,790 in 1919 by 160,239 fish (Appendix Table 19). Tables 15 and 16 present 1973 commercial salmon (excluding pinks) catches by fishing season and type of gear respectively.

A record total of 872 commercial, 739 vessel, 679 set gill net and 335 drift gill net licenses was issued for the district in 1973. This represented an 11 percent increase in commercial and vessel licenses over the 1972 registration (Appendix Table 20). The above license totals do not include commercial and vessel licenses issued for fish tendering purposes throughout the district. Table 17 shows the residency of all persons issued commercial fishing licenses for 1973. The vast majority of all commercial fishermen are Eskimo and Indian residents of the Yukon River drainage.

Much of the increase in total license registration occurred in subdistrict 334-40 where 101 commercial fishermen were registered. A total of 56 fishermen indicated that they planned to operate fishwheels in subdistrict 334-40, double the level of effort recorded in 1972. Also, for the first time four commercial fishermen operated fishwheels in upper portions of subdistrict 334-30. The increase in license registration and operation of fishwheels in subdistrict 334-40 reflects expansion of the upriver commercial fishery. In recognition of the recently developed upriver fishery and the desire of the fishermen in that area to more actively participate, the Board of Fish and Game adopted several regulation changes, effective for the 1974 fishing season, which will provide for a moderate increase in upriver catches.

The majority of the king salmon catch was handled by either mild cure-hard salt or fresh frozen processors. Production of canned king salmon was at a very low level as only two small canneries operated in the lower river. The majority of the chum and coho salmon were frozen by three floaters. Production of salmon roe totaled 137,594 pounds in 1973 (Appendix Table 25). Table 3 includes all buyers and processors that operated in the Yukon district during 1973.

Yukon district commercial fishermen received about \$1,217,000 for their catches in 1973, a 55 percent increase compared to 1972. In addition, a minimum of \$585,800 in wages was estimated to have been earned by processing plant employees and tenderboat operators. The latter figure was obtained from information supplied by a majority of the buyers and processors. The first wholesale value of the 1973 pack was estimated at \$4,453,900, an 85 percent increase compared to the 1972 value of \$2,405,200 (Appendix Table 26). Substantial increase in the 1973 wholesale value reflects on higher prices and the large chum salmon catch.

Appendix Tables 27 and 28 show mean fish prices and mean salmon weights respectively for 1960-1973. Average size of king salmon in 1973 was relatively large due to a high proportion of six-year old fish in the commercial catch.

King Salmon: Under the new regulations established by the Department since 1961, the annual king salmon catch has averaged nearly 104,000 compared to 63,023 for the previous nine-year period (1952-1960), an increase of about 65 percent (Appendix Table 19). The 1973 catch of 75,353 king salmon was the lowest since statehood, approximately 28,500 less fish compared to the previous 12-year average. The greatest catch ever made in the district was 129,706 king salmon taken in 1967.

The 1973 catch data presented in this report does not include king and chum salmon taken commercially by Canadian fishermen in Yukon Territory (Appendix Table 19).

Table 18 shows the king salmon catches (and incidental chum salmon catches) made in each subdistrict and statistical area during the 1973 king salmon season. Tables 20 through 22 present daily catch data for the lower three subdistricts. Daily catch data for subdistrict 334-40 are not shown.

The majority of the data available indicate that the 1973 run of king salmon was below average in abundance. The king salmon catch of 65,269 fish and the catch per boat hour (king salmon season) of 0.66 for subdistricts 334-10 and 334-20 combined was the lowest ever recorded (Appendix Table 22). Subsistence catches were average. Escapements were generally poor.

Breakup of the lower river ice in 1973 was normal--the river was clear of ice on June 1--unlike the previous two years when breakup was late and the king salmon runs were also late. The first king salmon taken in 1973 was caught at Pilot Station (mile 122) on June 3, indicating a few kings had entered the mouth on or before June 1. Throughout the remainder of June, the timing of the king (and chum) salmon runs appeared to be normal. Peak commercial catches were made during June 14-27.

Upriver, the first king salmon was reported as follows: Ruby (June 20), Tanana (June 20), Rampart (June 28), Nenana (July 4), Salcha River (July 10), Eagle (July 4), Dawson (July 11) and Whitehorse (August 2).

The greatest majority of the king salmon in 1973 entered the south mouth area, where the greater concentration of fishing gear is located, and very few kings entered the middle and north mouth areas. The probable explanation for this phenomenon was the presence of continuous northerly-northwesterly winds which apparently "forced" the migrating king salmon to the south mouth area. Fishermen in the Black River area, which is located approximately 20 miles southward from the entrance to the south mouth, experienced excellent fishing, taking 7,193 kings or 13.6 percent of the entire subdistrict 334-10 catch during the king salmon season. In the south mouth area (334-12), a total of 28,166 or 53 percent of the subdistrict 334-10 catch was taken.

King salmon fishing in the middle and north mouth can only be described as extremely poor. Only 40 kings were taken in the north mouth and 756 in the middle mouth, by far the lowest catches ever recorded from these areas. Appendix Table 23 shows the breakdown of king salmon catches by statistical area in subdistrict 334-10 for the years 1965-1973.

Based on the indicated below-average king salmon run as reflected by the comparative cumulative catch and catch per unit effort data from the commercial and test fishery, the subdistrict 334-10 and 334-20 fishery was closed by emergency order effective 6:00 a.m. June 27, the earliest date ever for a king salmon run of normal migration timing.

After the closure of the fishery on June 27 relatively large numbers of kings entered both the south and the middle mouth on June 28-29. Good catches of king salmon were reported taken by upriver subsistence fishermen. This late run of kings provided additional numbers of kings needed for escapement.

The 3,000 king salmon quota in subdistrict 334-30 was exceeded and the fishery was closed by emergency order effective 6:00 p.m. June 29. The 2,000 quota for subdistrict 334-40 was never exceeded.

Chum and Coho Salmon: Tables 20, 21 and 22 also present commercial catch data by fishing period for these species. The 1973 chum harvest of 517,934 was the largest in history (49 percent greater than the previous record catch of 346,724 in 1970) and exceeded the previous 12-year average by 387,807 fish. The 1973 coho salmon harvest of 36,641, the largest since statehood and surpassed only by the 1919 record catch of 37,010, exceeded the previous 12-year average by 21,648 fish (Appendix Table 19).

The large chum catch was a result of several factors including greater fishing effort and increased processing and tender facilities available for this species in recent years. Also, the increased harvest in recent years reflects the gradual relaxation of fishery restrictions due to the decline in the dependence upon subsistence fishing for chum salmon.

The total catch included 89,304 summer chums taken with primarily 8 1/2 inch mesh gill nets during the king salmon season in the lower three subdistricts (Table 18). Previous catches for these three subdistricts have ranged between 10,919 (1967) to 104,705 (1970).

The first summer chum salmon was taken on June 5 by Department test fishing nets at Flat Island. Peak commercial catches during the king salmon season occurred during the period June 25-27.

The subdistrict 334-10 and 334-20 fishing seasons were reopened effective 6:00 p.m., July 5, to fishing with six-inch maximum mesh size gill nets. An additional 150,728 summer chum salmon were taken during the first week of the second or "fall" season. In past years the fall season did not reopen until July 10-11 in order to protect the late run of kings. Reopening the fall season in early July in 1973 to fishing exclusively with small mesh gill nets allowed a greater harvest of the more abundant chums that are present and at the same time minimized the incidental catch of kings which totaled only 4,151 fish during July 5-11. Based on 174 samples of the catch, the majority of the kings taken in the commercial fishery during the beginning of the fall season were age 6₂ fish (76 percent), very similar to the age composition of fish taken with 8-8 1/2 inch mesh nets during the king salmon season.

The total fall season (after July 4) catch in subdistricts 334-10 and 334-20 was 415,627 chums (late summer chums and fall chums), 5,571 kings and the entire coho salmon catch reported above (Table 19). The first fall chum salmon were taken in the lower Yukon during the period of July 12-14. Fall chums are readily identifiable by their larger size, bright silvery appearance and robust condition. A total of 264,899 fall chums was harvested in 1973. The record fall chum catch (up 7 percent from the 1971 record catch of 246,384) was attributed to increased fishing effort, especially in subdistrict 334-20, where the fall chum salmon fishery in the past has been negligible. Based on catch per unit effort data, the fall chum run was apparently similar in magnitude to the 1972 run, but less than the 1969-1971 runs (Appendix Table 24).

The large coho salmon catch was attributable to increased effort and also to an apparent large run as indicated by catch per unit effort data (Appendix Table 24). Cohos are of minor importance and are taken incidentally to the more abundant fall chum salmon.

The subdistrict 334-10 and 334-20 commercial fisheries were closed by emergency order effective 6:00 p.m., September, 1 after the chum and coho salmon runs had peaked and the majority of the processors had ceased operation. The subdistrict 334-30 fishery did not reopen after the king salmon season due to the lack of buyer interest.

The subdistrict 334-40 commercial fishery was closed for the first time in history by emergency order effective 8:00 a.m., August 20, after the 2,000 area chum salmon catch quota had been taken. An emergency regulation was promulgated to allow a one week extension of the commercial salmon fishing season until 8:00 a.m., August 27. The final reported subdistrict 334-40 commercial chum salmon catch totaled 13,003 fish.

Enforcement

Observed violations have increased over previous years. In the lower Yukon River fishery the most common violation was fishing during the closed

period, especially during the "fall season." For example, during a single aircraft patrol by the Division of Commercial Fisheries staff on August 9 in the Munson Island-Casey Channel area of the south mouth, a total of 23 set gill nets was observed fishing during the closed period. Eleven of these nets operated by 10 fishermen were identified. Four of these fishermen were cited by Division of Fish and Wildlife Protection personnel and two were fined.

The Division of Commercial Fisheries staff spent considerable effort checking compliance with the new regulation requiring a six-inch maximum mesh size for commercial gill nets in subdistricts 334-10 and 334-20 when the season reopened in early July. A total of 87 set and drift gill nets was checked in the Flat Island, Casey Channel, Emmonak and Mountain Village areas. Compliance was generally good as only three nets larger than six-inch mesh were found. One of these illegal nets was confiscated and the net was later returned to the fisherman. Verbal warnings were given to the fishermen operating the other two nets. The only serious violation of the six-inch maximum mesh size regulation apparently occurred in the Pilot Station area where a few fishermen obviously fished large mesh size gillnets since large numbers of kings were taken, as evidenced from fish ticket data. Due to logistical and time limitations, the Department was unable to patrol this area.

Other violations observed in the lower Yukon area included fishing farther than one nautical mile offshore from any grassland bank in unmarked coastal areas. Also, fishing unmarked gear was a common violation.

In the upper Yukon River area the major violation encountered was the chronic failure of the processors and fish buyers at Nenana to provide the Department with timely, accurate salmon catch and roe production data. Also, the illegal sale of roe from subsistence caught salmon is apparently widespread.

Under new procedures enacted in 1972, commercial fisheries personnel did not issue violation notices, but instead documented violations or, in some cases, confiscated gear and turned the information over to Division of Fish and Wildlife Protection personnel for follow-up action.

SUBSISTENCE FISHERY

Comprehensive annual surveys of the Yukon River subsistence salmon fishery were initiated by the Department in 1961, but the data obtained cannot be easily compared with that of earlier seasons. The methods and coverage of these earlier surveys were not documented and their accuracy cannot be determined.

Methods used to survey the Yukon subsistence fishery and treatment of this data are similar to that previously described for the Kuskokwim district. Since 1961 the Department has annually surveyed all fishermen along the main river in Alaska, including the Tanana River, as far upstream as the village of Nenana and the village of Venetie on the Chandalar River.

Catch data from the Canadian portion of the drainage has been supplied by personnel of Environment Canada-Fisheries Service since 1962. In recent years the Department has conducted surveys of Koyukuk River villages.

An estimated 22,215 king and 186,179 other species of salmon, mostly chums, were taken in the Yukon River drainage (including Yukon Territory catches). In addition, 98 kings and 2,345 other species (not included in the Yukon River drainage totals) were reported taken by seven fishing families at Stebbins, a coastal village located several miles north of the Yukon River mouth. Table 23 presents 1973 catch data for each Yukon River community and Appendix Table 29 shows comparative Yukon River catch data for 1961-73. Appendix Table 19 shows Yukon River drainage historical subsistence catch data for 1918-1973.

During the last few seasons, a greater attempt was made to contact all residents in all Yukon River communities. A total of 878 families was recorded in 1973, but only 557 had one or more members who were subsistence fishermen. There were 214 nonfishing families in addition to 107 families for which it was impossible to determine if they fished or not (Table 24).

Comparing catches from villages surveyed each year since 1961 ("Equivalent catches"), the 1973 Yukon River king salmon harvest was larger than the previous 12-year average of 17,095 fish (Appendix Table 29).

For the eighth consecutive season, a relatively small catch of the "other salmon" (mostly chums) species was taken in 1973. The 1973 catch was the second smallest harvest ever recorded. Equivalent catches averaged 400,874 during 1961-1965, compared to an average of only 185,586 during 1966-1973, a decrease of 54 percent.

Permits are required for subsistence fishing in the upper Tanana River drainage upstream from the mouth of Wood River. In 1973 restrictions were placed on the subsistence salmon fishery because of the expected poor run of Tanana River drainage kings. Subsistence salmon fishing was prohibited until July 15 and fishermen were limited to five kings apiece. Also, the combined chum and coho catch was limited to 75 fish per permittee. A total of 33 permits was issued for salmon fishing with 17 fishermen reporting catches of 16 king, 159 coho and 524 chum salmon. Thirteen permittees did not fish and three fishermen did not turn in their catch reports. In addition, 16 permits were issued for the taking of salmon carcasses in the vicinity of Big Delta. A total of 1,561 chum salmon carcasses was reported taken by eight fishermen. Also, 12 permits were issued for taking whitefish and miscellaneous species and 11 reporting fishermen took 3,002 whitefish, 114 suckers and 66 burbot.

From all indications, the annual Yukon River subsistence salmon harvests for some years in the early 1900s and even as late as 1940 exceeded one million fish (Appendix Table 19). Recent declines in subsistence catches are not necessarily due to fish abundance, but mainly reflect decreases in fishing effort and dependence due to a changing way of life.

To illustrate changes in effort, there were 393 fishwheels operated on the Yukon River in 1918. Fishwheels are very effective and each wheel is capable of taking from 2,000 to 5,000 chum salmon annually if fished properly. The number of fishwheels recorded during the 1970 survey was an all-time low of 56, a decrease of 200 percent since 1961. In 1961 each fishing family kept an average of 7.7 sled dogs, while in 1973 this figure was down to 4.4 sled dogs. Finally, the number of snowmachines owned by fishing families was documented beginning with the 1967 season when the average number of snowmachines per family was 0.41. In 1973 the average number of snowmachines per family increased to 1.0 (Appendix Table 29).

ESCAPEMENT

The Yukon River drainage (330,000 square miles) is too extensive for complete aerial survey coverage during any given season. In addition, poor survey conditions have prevented surveys from being flown during some years, or have resulted in minimum counts. Table 25 presents aerial survey data for all surveys conducted in 1973. Aerial survey conditions were generally good.

Appendix Table 30 presents comparative king salmon escapement data for selected tributaries during the 1959-1973 period. Surveys of king salmon index spawning streams in the Alaskan portion of the Yukon River indicated that escapements ranged from "fair" in the lower portion of the drainage (Andreafsky and Anvik Rivers) to very poor in Tanana River system. The below-average escapements into the Tanana River tributaries (Salcha, Chena and Goodpaster Rivers) were attributed to a poor survival of progeny from the 1967 brood year escapements. Carcass sampling in the Salcha River indicated that the escapement was composed of 29 percent six-year old fish, usually the dominant age class. During August 1967 these upper Tanana River tributaries were flooded at the peak of spawning, apparently resulting in mortality of recently deposited eggs.

Escapements of king salmon into the Yukon Territory were also very poor. Aerial surveys of the Big Salmon and Nisutlin Rivers indicated king salmon escapements in these streams were below average. The Whitehorse Dam fishway count of 228 kings was the lowest ever recorded. The poor escapements in the Yukon Territory in 1973 may possibly be attributable to inadequate escapements of the 1967 brood year and/or poor survival of the progeny. However, there is not sufficient data available, for example the magnitude of the 1967 escapements is unknown, to pinpoint the cause of the poor return of spawners in 1973.

Limited studies indicated that the quality, in terms of sex ratio, of upper Yukon River drainage king salmon escapements were in favor of males. In the Salcha River the sex ratio was 1.6:1 in favor of males and at Whitehorse the ratio was 1.2:1 in favor of males. In contrast, the sex ratio of these areas in 1972 was in favor of females.

Appendix Table 31 presents comparative summer and fall chum salmon escapements for selected streams. Summer chum escapements were judged fair in the Andreafsky and Anvik Rivers. During the past two years the Department has initiated intensive surveys of fall chum salmon spawners in the upper Yukon River drainage. Several previously major undocumented spawning areas have been identified. In 1973 the following fall chum streams were surveyed for the first time: Sheenjek River (1,175 chums), Bear Paw River (1,530) and Delta-Clearwater Slough (1,720). Comparable surveys of the Delta River and portions of the Tanana River indicate that fall chum escapements for these areas were of similar magnitude in 1972 and 1973. In the Yukon Territory, a total of 16,239 fall chums was enumerated in the Fishing Branch River, a tributary of the Porcupine River, in 1973 by Environment Canada-Fisheries Service personnel.

Coho salmon were enumerated in the following upper Tanana River tributaries: Richardson-Clearwater Creek (350-400), Clearwater Lake outlet (551) and Delta-Clearwater River (3,322). The escapement of cohos into the Delta-Clearwater River was considered excellent.

OUTLOOK FOR 1974

It is difficult to predict the relative magnitude of the 1974 Yukon River king salmon run. Based on only commercial catch data of the 1968 brood year, it would indicate that the magnitude of the run was relatively large. A total of 106,526 kings was harvested by commercial fishermen in 1968. However, the majority of the kings in 1968 entered the south mouth of the Yukon River, where the majority of the fishing gear is located, and the size of the catch may have reflected on the large amount of effort rather than the strength of the run. Escapements in 1968, based on surveys of some index streams, were poor, or at best considered average. There are indications that the 1968 run may have been possibly overharvested resulting in escapements that were not proportional to the commercial catch and, therefore, the return of six-year old kings, the dominant age class, is expected to be below average in abundance in 1974.

Due to poor survey conditions in 1967 and 1969, it is difficult to determine the strength of the king salmon escapements in these years and the resulting contribution to the return of seven and five year olds in 1974. Also, the 1969 brood year smolts may have been adversely affected by unusually cold temperatures during the winter and spring of 1970-1971 which could limit the return of five year olds in 1974 and also the six year olds in 1975.

The expansion of the Japanese mothership fisheries in the high seas during 1972 may possibly result in lesser numbers of king salmon returning in 1974. In 1972 the Japanese fleet harvested approximately 275,000 kings in the North Pacific of which 85 percent (230,000) were taken in the Bering Sea, the fourth largest harvest. Most of the high seas harvest of kings are composed of immature four-year old fish which would normally return as six year olds two years later. Studies conducted by the National Marine Fisheries Service indicate that the majority of the king salmon intercepted by the

Japanese mothership fishery in the Bering Sea originated from Western Alaskan rivers (including the Yukon River).

In summary, it appears that the 1974 king salmon run may be less than average and that fishing time restrictions may be required during the 1974 season in order to obtain adequate spawning escapements. Also, until future returns can be studied, the commercial harvest goal for Yukon River king salmon should not exceed 90,000 fish unless an exceptionally large run is indicated. The commercial harvest goal has been revised downward from the previously established goal of 105,000 kings in view of the recent below-average size runs and the necessity to provide for adequate escapements.

There is little information on which to estimate the relative magnitude of the 1974 runs of chum and coho salmon. However, there is evidence that the return of four-year old chums from the 1970 brood year may be below average in magnitude in 1974. Although the 1970 brood year run of chum salmon was of large magnitude based on catch and escapement data, there are indications that the resulting progeny (eggs and alevins) experienced severe cold temperatures during the winter-spring of 1970-71 and as a result survival rates were probably poor. Also, chum salmon fry entering the Bering Sea during the spring of 1971 encountered below-average temperatures and additional mortalities may have occurred. The adverse effects of the severe cold temperatures during the winter-spring of 1970-71 have been attributed to the poor return of pinks in 1972 and sockeye in 1973 elsewhere in Alaska.

The adverse condition during the winter of 1970-71 probably had a more serious effect on the summer chum rather than the fall chum salmon run. The summer chum run for the most part spawn in run-off streams which are probably more susceptible to freezing than the ground water, spring-fed fall chum spawning areas. If the chum runs in 1974 are below average in run magnitude, then fishing time restrictions may be necessary in order to insure that adequate escapements are obtained.

The management staff has established harvest goals of 500,000 summer and 250,000 fall chum salmon for the Yukon River commercial fisheries. An additional harvest of approximately 250,000 summer chums, above the record level of 253,035 fish taken in 1973, can be made only if the run is average or better size; also, more fishermen must operate smaller gill nets during the king salmon season than at present. The fall chum salmon run is presently being harvested at the maximum rate and an increased catch is not warranted until future returns can be evaluated.

The incidental coho salmon catch is expected to total 15,000-20,000 fish, depending on the amount of fishing effort exerted on the fall chum run.

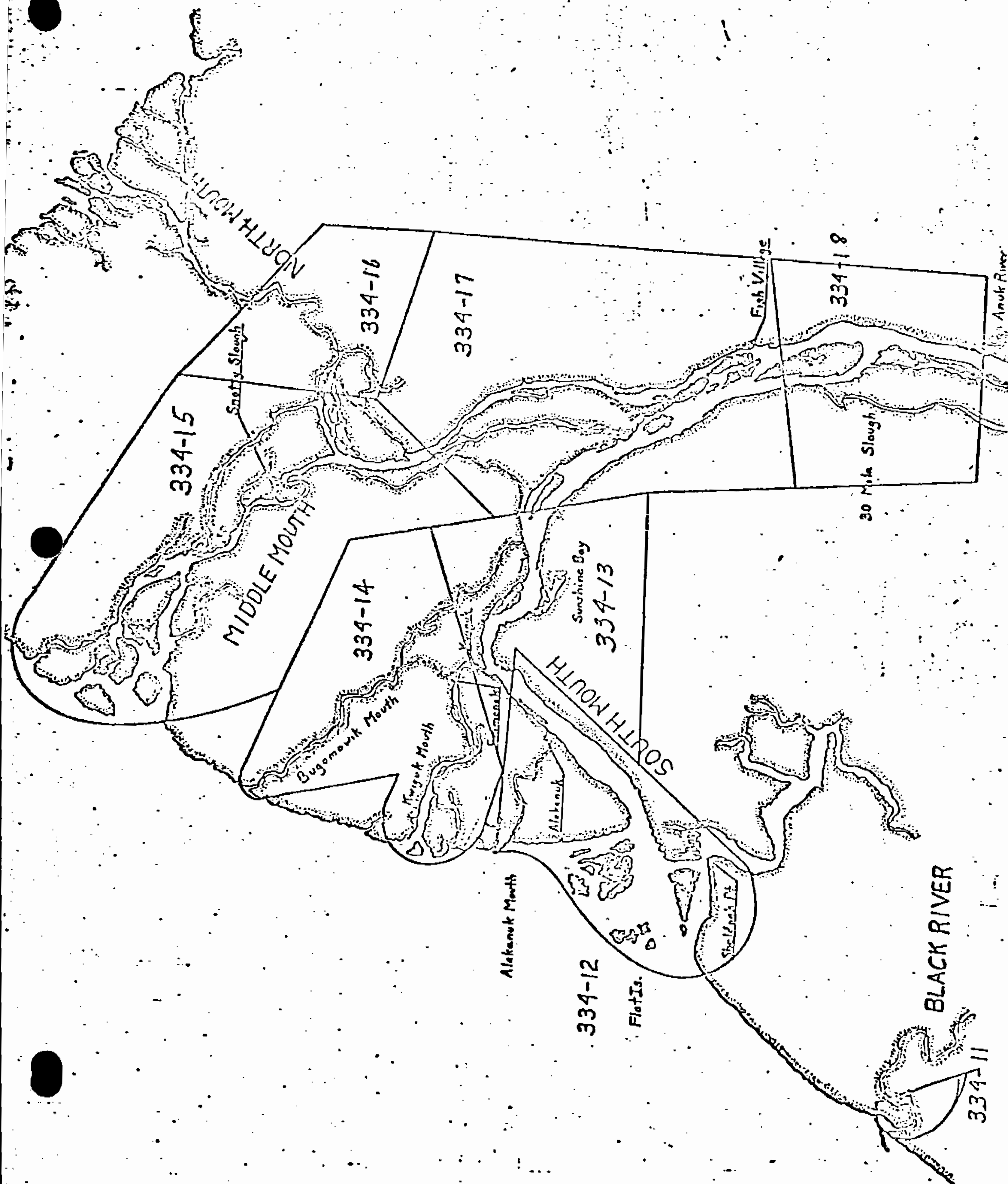


Figure 2. Sub-district 334-10, Yukon district.

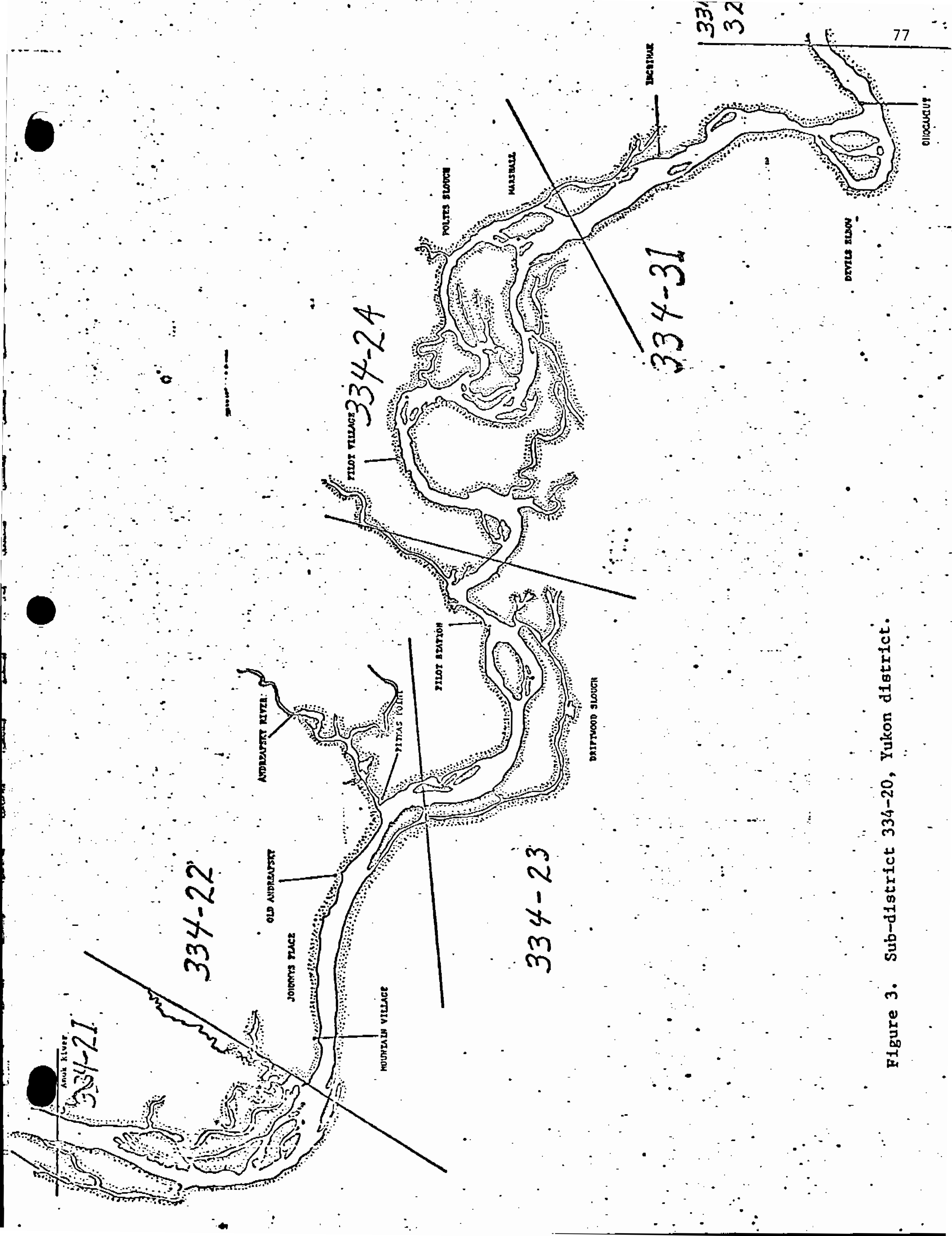


Figure 3. Sub-district 334-20, Yukon district.

Table 15. Commercial salmon catches by species and subdistrict, Yukon district, 1973.

Subdistrict	Kings	Cohos	Chums	Total
<u>334-10 (Mouth-Anuk River)</u>				
King salmon season (6/4-6/27)	52,790	-	74,779	127,569
Fall season (7/5-9/1)	4,191	34,860	320,648	359,699
Total	56,981	34,860	395,427	487,268
<u>334-20 (Anuk River-Owl Slough)</u>				
King salmon season (6/7-6/26)	12,479	-	14,062	26,541
Fall season (7/5-9/1)	1,380	1,781	94,979	98,140
Total	13,859	1,781	109,041	124,681
<u>334-30 (Owl Slough-Koyukuk River)</u>				
King salmon season (6/11-6/29)	3,204	-	463	3,667
<u>334-40 (Above Koyukuk River)</u>	1,309	-	13,003	14,312
GRAND TOTAL	75,353	36,641	517,934	629,928

Table 16. Commercial salmon catches by species, subdistrict and gear, Yukon district, 1973.

Subdistrict	Kings		Cohos		Chums		Total	
<u>334-10</u>								
Set gill net	50,200	(88.1%)	31,145	(89.3%)	340,411	(86.1%)	421,756	(86.5%)
Drift gill net	6,781	(11.9%)	3,715	(10.7%)	55,016	(13.9%)	65,512	(13.5%)
Subtotal	56,981	(100.0%)	34,860	(100.0%)	395,427	(100.0%)	487,268	(100.0%)
<u>334-20</u>								
Set gill net	5,468	(39.5%)	887	(49.8%)	23,048	(21.1%)	29,403	(23.6%)
Drift gill net	8,391	(60.5%)	894	(50.2%)	85,993	(78.9%)	95,278	(76.4%)
Subtotal	13,859	(100.0%)	1,781	(100.0%)	109,041	(100.0%)	124,681	(100.0%)
<u>334-30</u>								
Set gill net	2,165	(67.6%)			463	(100.0%)	2,628	(71.7%)
Drift gill net	1,039	(32.4%)					1,039	(28.3%)
Subtotal	3,204	(100.0%)			463	(100.0%)	3,667	(100.0%)
<u>334-40</u>								
Set gill net	759	(58.0%)			4,372	(33.6%)	5,131	(35.8%)
Drift gill net	9	(0.7%)			12	(0.1%)	21	(0.2%)
Fishwheel	541	(41.3%)			8,619	(66.3%)	9,160	(64.0%)
Subtotal	1,309	(100.0%)			13,003	(100.0%)	14,312	(100.0%)
<u>District 334</u>								
Set gill net	58,592	(77.8%)	32,032	(87.4%)	368,294	(71.3%)	458,918	(72.9%)
Drift gill net	16,220	(21.5%)	4,609	(12.6%)	141,021	(27.2%)	161,850	(25.7%)
Fishwheel	541	(0.7%)			8,619	(1.5%)	9,160	(1.4%)
Total	75,353	(100.0%)	36,641	(100.0%)	517,934	(100.0%)	629,928	(100.0%)

Table 17. Yukon district commercial fishing licenses issued by residence, 1973.

Residence	334-10	334-20	334-30	334-40	Total--334
Sheldons Point	27				27
Alakanuk	105				105
Emmonak	119				119
Kotlik	84				84
Hamilton	1				1
Scammon Bay	38				38
Stebbins	11				11
Shaktoolik	3				3
Unalakleet	13				13
Chuloonawick	2				2
Mt. Village	44	78			122
Pitkas Point		19			19
St. Marys	26	39			65
Pilot Station	15	43			58
Marshall	12	24	17		53
Russian Mission	5		11		16
Holy Cross	1		18		19
Bethel	3	1			4
Anchorage	3				3
Homer	2				2
Indian		2			2
Everett, WA	1				1
Kaltag			1		1
Nulato			3		3
Galena				4	4
Ruby				12	12
Tanana				20	20
Rampart				12	12
New Minto				3	3
Stevens Village				8	8
Fort Yukon				1	1
Central				1	1
Eagle				6	6
Manley Hot Springs				1	1
Nenana				15	15
Fairbanks				17	17
Circle				1	1
Total	515	206	50	101	872

Table 18. Commercial salmon catches by statistical area,
during king salmon season, Yukon district, 1973.

Statistical Area	King	Chum
334-11	7,193	10,535
12	28,166	43,667
13	4,302	2,330
14	3,468	1,532
15	756	161
16	40	4
17	6,683	13,548
18	2,182	3,002
Subtotal 334-10	52,790	74,779
334-21	5,779	3,042
22	4,863	8,902
23	899	283
24	938	1,835
Subtotal 334-20	12,479	14,062
334-31	2,264	
32	940	463
Subtotal 334-30	3,204	463
334-40	1,309	13,003
Subtotal 334-40	1,309	13,003
Total 334	69,782	102,307

Table 19. Commercial salmon catches by statistical area, during fall season, Yukon district, 1973.

Statistical Area	King	Coho	Chum
334-11	282	4	6,724
12	1,796	9,900	132,452
13	355	4,799	37,253
14	176	2,274	17,075
15	618	9,230	61,809
16	236	70	6,409
17	501	7,253	39,222
18	227	1,330	19,704
Subtotal 334-10	4,191	34,860	320,648
334-21	180		19,165
22	711	770	47,626
23	207	8	5,898
24	282	1,003	22,290
Subtotal 334-20	1,380	1,781	94,979
Total 334	5,571	36,641	415,627

Table 20. Commercial salmon catches from subdistrict 334-10, Yukon district, drift and set gill nets combined, 1973. 83

Date of landing	Hours fished	No. of boats	Total catch (catch/boat hour)			Cumulative catch		
			King	Coho	Chum	King	Coho	Chum
6/4	6							
6/5	24		95			95		
6/6	6		181			276		
	36	52	276 (.15)					
6/7	6		194		89	470		89
6/8	24		1,105		228	1,575		317
6/9	18		1,189		469	2,764		786
	48	195	2,488 (.27)		786 (.08)			
6/11	6		233		651	2,997		1,437
6/12	24		4,204		2,901	7,201		4,338
6/13	6		2,182		2,386	9,383		6,724
	36	278	6,619 (.66)		5,938 (.59)			
6/14	6		397		231	9,780		6,955
6/15	24		3,611		3,345	13,391		10,300
6/16	18		8,142		6,059	21,533		16,359
	48	319	12,150 (.79)		9,635 (.63)			
6/18	6		1,333		846	22,866		17,205
6/19	24		5,874		5,475	28,740		22,680
6/20	6		1,847		862	30,587		23,542
	36	299	9,054 (.84)		7,183 (.67)			
6/21	6		893		1,670	31,480		25,212
6/22	24		4,177		3,961	35,657		29,173
6/23	18		6,909		10,558	42,566		39,731
	48	318	11,979 (.78)		16,189 (1.06)			
6/25	6		1,211		2,482	43,777		42,213
6/26	24		6,075		18,326	49,852		60,539
6/27	6		2,938		14,240	52,790		74,779
	36	346	10,224 (.82)		35,048 (2.81)			
Subtotal ^{1/}	288	438	52,790 (.70)		74,779 (1.00)			
7/5	6		138		3,511	138		3,511
7/6	24		1,249		40,086	1,387		43,597
7/7	18		1,231		44,391	2,618		87,988
	48	274	2,618 (.20)		87,988 (6.69)			
7/9	6		50		1,309	2,668		89,297
7/10	24		358		12,233	3,026		101,530
7/11	18		209		6,883	3,235		108,413
	48	291	617 (0.4)		20,425 (1.46)			
7/12	6		38		1,560	3,273		109,973
7/13	24		188		10,256	3,461		120,229
7/14	18		177		10,256	3,638		130,485
	48	296	403 (.03)		22,072 (1.56)			
7/16	6		18		1,119	3,656		131,604
7/17	24		112		9,352	3,768		140,956
7/18	18		100		5,909	3,868		146,865
	48	271	230 (0.2)		16,380 (1.30)			
7/19	6		24	1	5,107	3,892	1	151,972
7/20	24		118	2	22,368	4,010	3	174,340
7/21	18		55	15	9,740	4,065	18	184,080
	48	278	197 (.01)	18 (+)	37,215 (2.79)			
7/23	6			3	1,030		21	185,110
7/24	24		24	11	4,890	4,089	32	190,000
7/25	18		14	51	7,882	4,103	83	197,882
	48	184	38 (+)	65 (.01)	13,802 (1.56)			
7/26	6		9	21	8,610	4,112	104	206,492
7/27	24		16	73	25,542	4,128	177	232,034
7/28	18		9	37	11,267	4,137	214	243,301
	48	299	34 (+)	131 (.01)	45,419 (3.17)			
7/30	6			9	607		223	243,908
7/31	24		9	162	5,037	4,146	385	248,945
8/1	18		1	156	4,471	4,147	541	253,416
	48	240	10 (+)	327 (.03)	10,115 (.88)			

Table 20. (Continued) Commercial salmon catches from subdistrict 334-10, Yukon district, drift and set gill nets combined, 1973.

Date of landing	Hours fished	No. of boats	Total catch (catch/boat hour)			Cumulative catch		
			King	Cono	Chum	King	Cono	Chum
8/2	6			26	256		567	253,672
8/3	24		4	190	1,444	4,151	757	255,116
8/4	18		6	366	2,951	4,157	1,123	258,067
	<u>48</u>	176	<u>10</u> (+)	<u>582</u> (.07)	<u>4,651</u> (.55)			
8/6	6		1	20	193	4,158	1,143	258,260
8/7	24		3	340	2,880	4,161	1,483	261,140
8/8	18		6	1,442	3,289	4,167	2,925	264,429
	<u>48</u>	177	<u>10</u> (+)	<u>1,802</u> (.21)	<u>6,362</u> (.79)			
8/9	6			460	3,359		3,385	267,788
8/10	24		6	3,632	16,532	4,173	7,017	284,320
8/11	18		1	2,429	10,789	4,174	9,446	295,109
	<u>48</u>	229	<u>7</u> (+)	<u>6,521</u> (.59)	<u>30,680</u> (2.79)			
8/13	6			135	658		9,581	295,767
8/14	24		1	1,422	3,044	4,175	11,003	298,811
8/15	18		2	1,375	2,407	4,177	12,378	301,218
	<u>48</u>	149	<u>3</u> (+)	<u>2,932</u> (.41)	<u>6,109</u> (.85)			
8/16	6			1,607	1,024		13,985	302,242
8/17	24		1	3,710	3,618	4,178	17,695	305,860
8/18	18			2,604	2,149		20,299	308,009
	<u>48</u>	175	<u>1</u> (+)	<u>7,921</u> (.94)	<u>6,791</u> (.80)			
8/20	6		1	607	1,173	4,179	20,906	309,182
8/21	24		1	3,417	3,769	4,180	24,323	312,951
8/22	18		3	2,760	2,909	4,183	27,083	315,860
	<u>48</u>	175	<u>5</u> (+)	<u>6,784</u> (.81)	<u>7,851</u> (.93)			
8/23	6			104	76		27,187	315,936
8/24	24		2	1,149	900	4,185	28,336	316,836
8/25	18		3	1,670	1,173	4,188	30,006	318,009
	<u>48</u>	128	<u>5</u> (+)	<u>2,923</u> (.48)	<u>2,149</u> (.35)			
8/27	6			59	37		30,065	318,046
8/28	24		1	1,283	965	4,189	31,348	319,011
8/29	18			1,868	832		33,216	319,843
	<u>48</u>	82	<u>1</u> (+)	<u>3,210</u> (.82)	<u>1,834</u> (.47)			
8/30	6		1	136	59	4,190	33,352	319,902
8/31	24		1	727	330	4,191	34,079	320,232
9/1	18			781	416		34,860	320,648
	<u>48</u>	51	<u>2</u> (+)	<u>1,644</u> (.67)	<u>805</u> (.33)			
Subtotal ^{2/}	816	445	4,191 (.03)	34,860 (.21)	320,648 (1.92)			
Grand Total	2,104	529	56,981	34,860	395,427			

1/ King salmon season (6/4-6/27).

2/ Fall season (7/5-9/1).

Table 21. Commercial salmon catches from subdistrict 334-20, Yukon district, drift and set gill nets combined, 1973.

Date of landing	Hours fished	No. of boats	Total catch (catch/boat hour)			Cumulative catch		
			King	Coho	Chum	King	Coho	Chum
6/7	6							
6/8	24		6			6		
6/9	6		53		20	59		20
	<u>36</u>	11	59(.15)		20(.05)			
6/10	6				21			41
6/11	24		68		8	127		49
6/12	18		503		17	630		66
	<u>48</u>	63	571(.19)		46(.02)			
6/14	6		82		12	712		78
6/15	24		625		137	1,337		215
6/16	6		453		311	1,790		526
	<u>36</u>	103	1,160(.31)		460(.12)			
6/17	6							
6/18	24		1,221		1,474	3,011		2,000
6/19	18		3,662		2,412	6,673		4,412
	<u>48</u>	121	4,883(.84)		3,886(.67)			
6/21	6		3		8	6,676		4,420
6/22	24		1,369		1,829	8,045		6,249
6/23	6		421		1,316	8,466		7,565
	<u>36</u>	116	1,793(.43)		3,153(.76)			
6/24	6							
6/25	24		957		2,350	9,423		9,915
6/26	18		3,056		4,147	12,479		14,062
	<u>48</u>	133	4,013(.63)		6,497(1.02)			
Subtotal 1/	252	167	12,479(.53)		14,062(.59)			
7/5	6				180			180
7/6	24		211		11,995	211		12,175
7/7	6		197		8,462	408		20,637
	<u>36</u>	97	408(.12)		20,637(5.91)			
7/9	6		216		7,992	624		28,629
7/10	24		292		8,657	916		37,286
7/11	18							
	<u>48</u>	105	508(.10)		16,649(3.30)			
7/12	6		9		71	925		37,357
7/13	24		78		1,835	1,003		39,192
7/14	18		178		3,123	1,181		42,315
	<u>48</u>	91	265(.06)		5,029(1.15)			
7/16	6							
7/17	24		58		4,118	1,239		46,433
7/18	18		61		3,242	1,300		49,675
	<u>48</u>	102	119(.02)		7,360(1.50)			
7/19	6		6		412	1,306		50,087
7/20	24		31		858	1,337		50,945
7/21	18		18		686	1,355		51,631
	<u>48</u>	65	55(.02)		1,956(0.63)			
7/23	6							
7/24	24		2		552	1,357		52,183
7/25	18		4		334	1,361		52,517
	<u>48</u>	17	6(.01)		886(1.09)			
7/26	6		3		185	1,364		52,702
7/27	24		1		3,605	1,365		56,307
7/28	18		1		6,159	1,366		62,466
	<u>48</u>	78	5(+)		9,949(2.66)			
7/30	6				48			62,514
7/31	24		4		3,761	1,370		66,275
8/1	18		2		854	1,372		67,129
	<u>48</u>	78	6(+)		4,663(1.25)			

Table 21. (Continued) Commercial salmon catches from subdistrict 334-20, Yukon district, drift and set gill nets combined, 1973.

Date of landing	Hours fished	No. of boats	Total catch (catch/boat hour)			Cumulative catch		
			King	Coho	Chum	King	Coho	Chum
8/2	6				452			67,581
8/3	24		2		527	1,374		68,108
8/4	18				396			68,504
	48	35	2(+)		1,375(.82)			
8/6	6				164			68,668
8/7	24		2		2,527	1,376		71,195
8/8	18		3	8	5,958	1,379	8	77,153
	48	69	5(+)	8(+)	8,649(2.61)			
8/9	6				248			77,381
8/10	24				193			77,594
8/11	18			25	4,131		33	81,725
	48	36		25(.01)	4,572(2.98)			
8/13	6				75			81,800
8/14	24				2,124			83,924
8/15	18				3,311			87,235
	48	41			5,510(2.80)			
8/16	6				815			88,050
8/17	24			252	1,281		285	89,331
8/18	18			86	2,424		371	91,755
	48	43		338(.16)	4,520(2.19)			
8/20	6				158			91,913
8/21	24			680	1,120		1,051	93,033
8/22	18			135	1,152		1,186	94,185
	48	39		715(.38)	2,430(1.30)			
8/23	6							
8/24	24			227	273		1,413	94,458
8/25	18			259	499		1,672	94,957
	48	32		486(.32)	772(.50)			
8/27	6		1	28		1,380	1,700	
8/28	24			47	6		1,747	94,963
8/29	18			6			1,753	
	48	3	1(+)	81(.56)	6(.04)			
8/30	6			28			1,781	
8/31	24							
9/1	18				16			94,979
	48	1		28(.58)	16(.33)			
Subtotal ^{2/}	804	183	1,380(.03)	1,781(.04)	94,979(2.18)			
Grand Total	1,056	205	13,859	1,781	109,041			

1/ King salmon season (6/7-6/26).

2/ Fall season (7/5-9/1).

Table 22. Commercial salmon catches from subdistrict 334-30, Yukon district, drift and set gill nets combined, 1973.

Date of Landing	Hours Fished	No. of Boats	Total catch (catch/boat hour)		Cumulative catch	
			King	Chum	King	Chum
6/11	6					
6/12	24					
6/13	24					
6/14	24		15		15	
6/15	18		75		90	
	<u>96</u>	11	90(.09)			
6/18	6		21		111	
6/19	24		90		201	
6/20	24		95		296	
6/21	24		475	63	771	63
6/22	18		762	116	1,533	179
	<u>96</u>	31	1,443(.48)	179(.06)		
6/25	6		2		1,535	
6/26	24		261	284	1,796	463
6/27	24		199		1,995	
6/28	24		426		2,421	
6/29	18		783		3,204	
	<u>96</u>	35	1,671(.50)	284(.08)		
Grand Total	288	38	3,204(.44)	463(.06)		

Table 23. Yukon River subsistence salmon catch data, 1973 (includes Canadian catches).

Village	Date of Survey	Fishing Families	Dogs ^{1/}	Snow-machines ^{1/}	Kings	Other Salmon ^{2/}	Total Salmon	5 1/2" ^{3/} Nets	8 1/2" ^{3/} Nets	Fishwheel
Sheldon's Point	8/3	15	20	18	165	2,267	2,432	36		
Alakanuk	8/6	44	62	51	373	5,241	5,614	90	27	
Emmonak	8/4	42	46	49	899	8,825	9,724	76	27	
Lamont Slough	8/7	2	3	1	94	62	156	2	1	
Aproka Pass and vicinity	8/8	2	3	4	12	508	520	6	0	
Kotlik	8/9	22 (127)	28	28	714	5,061	5,775	49	7	
Mt. Village	8/10	40	68	52	741	6,142	6,883	59	32	
Pitkas Point	8/11	9	32	9	391	1,393	1,784	11	4	
St. Marys	8/11	25	54	30	672	6,962	7,634	27	7	
Pilot Station	8/13	32	79	26	1,303	7,424	8,727	43	23	
Marshall	8/13	23 12 ^{3/}	114	20	955	4,400	5,355	33	18	
Russian Mission	8/14	13	32	12	1,126	1,997	3,123	14	5	
Holy Cross	8/15	37	37	13	3,338	3,176	6,514	28	21	
Anvik	8/16	13	51	15	67	20,850	20,917	6	2	3
Grayling	8/16	18	87	24	489	12,105	12,594	21	5	6
Kaltag	8/17	14	110	15	130	20,243	20,373	17	1	3
Nulato	8/18	21	209	27	281	12,388	12,669	28	3	3
Koyukuk	8/19	8	96	6	411	1,428	1,839	7	4	3
Galena	8/19	11	86	14	436	3,922	4,358	15	5	4
Ruby	8/20	10	95	12	2,098	10,810	12,908	6	4	5
Tanana	9/4	18	217	16	869	9,715	10,584	5	9	14
Rampart	8/24	9	100	8	1,609	3,607	5,216	9	17	1
New Minto fish camp	8/25	3	48	2	20	2,020	2,040	4	1	1
Stevens Village	8/24	8	73	5	967	3,216	4,183	2	6	4
Beaver	8/24	6	35	8	307	1,176	1,483	3	6	2
Fort Yukon	8/24	8	148	10	536	2,732	3,268	2	0	11
Circle	8/24	3	21	2	225	642	867	1	6	2
Eagle	8/24	4	21	2	267	1,687	1,954	3	5	0
Stewart ^{3/}					99		99			
Mayo ^{3/}					25		25			
Fort Selkirk ^{3/}					45	98	143			
Pelly ^{3/}					53		53			
Fraser Falls ^{3/}					25		25			
Faro ^{3/}					75		75			
Ross River ^{3/}					75		75			
Minto ^{3/}					261	327	588			
Carmacks ^{3/}					1,384	487	1,871			
Johnsons Crossing ^{3/}					54		54			
Burwash ^{2/}						199	199			
MAIN RIVER TOTALS		460	1,975	479	21,591	161,110	182,701	603	246	62
Huslia	8/23	9	83	11	29	3,363	3,392	8		
Hughes	8/23	7	69	7	32	2,541	2,573	10		
Alatna	8/23	2	11	3	1	27	28	2		
Allakaket	8/23	14	75	12	61	1,808	1,869	23	1	
KOYUKUK RIVER TOTALS		32	238	33	123	7,739	7,862	43	1	
Nenana	8/25	10	97	10	455	9,436	9,891	3	3	15
Fairbanks and vicinity ^{4/}		22			26	1,657	1,683	16	0	6
TANANA RIVER TOTALS		32	97	10	481	11,093	11,574	19	3	21
Venetie		3	17	4	0	410	410	4	2	0
CHANDALAR RIVER TOTALS		3	17	4	0	410	410	4	2	0
Old Crow ^{3/}		30			20	5,827	5,847			
PORCUPINE RIVER TOTALS		30			20	5,827	5,847			
GRAND TOTAL--YUKON RIVER ^{5/}		557+	2,327+	526+	22,215	186,179	208,394	669+	252+	83+

^{1/} Data from fishing families only.^{2/} Mostly chums, but includes small numbers of pink and coho salmon.^{3/} From Environment Canada-Fisheries Service, Whitehorse; only catch data available.^{4/} Includes reports turned in by permittees (subsistence fishing permits required for Tanana River above Wood River).^{5/} Does not include catches of 98 kings and 2,345 other salmon made by 7 fishing families from Stebbins, a small coastal village located outside the Yukon River drainage boundary.

Table 24. Yukon River subsistence salmon fishery data from nonfishermen, 1973.

Village	Nonfishing families	People in families	Sled dogs	Snow-machines	Families with no information ^{1/}
Stebbins Village	5	29	4	4	0
Alakanuk	18	95	21	19	15
Emmonak	31	115	43	31	9
Lamont Slough	1	1	0	0	0
Kotlik	13	59	8	15	4
Mountain Village	18	107	16	15	7
Pitkas Point	4	18	5	2	0
St. Mary's	13	66	21	11	5
Pilot Station	14	67	17	6	6
Marshall	8	24	35	7	4
Russian Mission	12	37	10	10	2
Holy Cross	4	5	2	1	0
Anvik	3	9	2	6	0
Grayling	3	8	1	1	1
Kaltag	10	36	37	8	7
Nulato	10	51	70	9	3
Koyukuk	1	11	22	1	7
Galena	2	3	1	1	0
Ruby	5	36	53	6	1
Tanana	2	7	33	2	11
Rampart	4	15	29	2	1
New Minto Fish Camp	2	14	13	0	4
Stevens Village	2	4	10	2	1
Beaver	4	13	10	2	0
Fort Yukon	4	18	27	4	0
Circle	1	6	4	1	1
Eagle	1	2	1	0	0
Main River Totals	195	856	495	166	90
Huslia	8	52	42	18	1
Hughes	2	7	11	1	0
Alatna	0	0	0	0	0
Allakaket	5	23	17	8	5
Koyukuk River Subtotals	15	82	70	27	6
Nenana	1	4	1	1	7
Tanana River Subtotals	1	4	1	1	7
Venetie	3	16	6	3	4
Chandalar River Subtotals	3	16	6	3	4
Grand Total	214	958	572	197	107

^{1/} Most of the families were not interviewed and it was not possible to determine if they fished or not.

Table 25. Aerial survey salmon escapement counts,^{1/} Yukon district, 1973.

Stream (Drainage)	Date	Survey Rating	Kings	Cohos	Chums
<u>Andreafsky River</u>					
West Fork	7/21	Fair	788		51,835
East Fork	7/27; 8/27	Poor-Fair	825		10,149
Subtotal					
<u>Anvik River</u>	7/27	Poor	222		26,156
(Anvik River Tower Count)			517	286 pinks	71,475
<u>Tanana River Drainage</u>					
Nenana River (slough near Clear Air Force Base)	10/15	Fair			115+
Kantishna River					
Toklat River	10/23	Good			6,957
Bear Paw River	10/23	Fair			1,530
Subtotal					8,487
Chena River	8/7	Good	21		79
Salcha River	8/6; 8/9	Fair; Poor	249		290
Salcha River ^{2/}	8/10	Excellent	391		
Goodpaster River	8/7	Fair	14		52
Richardson-Clearwater Creek	10/15	Fair		350-400	4
Delta River	10/26	Fair			7,971
(Delta River Population Estimate)					10,262
Clearwater Lake and Stream	10/15			551	
Delta-Clearwater River	10/15			3,322	40
Delta-Clearwater Slough	10/26				1,720
Upper Tanana River					
Benchmark #735 Slough	10/22				127
Near Richardson Highway Bridge	10/26				5,635
Bluff Cabin Slough	10/26				3,450
Near mouth Delta-Clearwater River	10/26				153
Subtotal					9,365
<u>Porcupine River Drainage</u>					
Sheenjek River	9/19				1,175
Fishing Branch River ^{3/}				8	16,239
Subtotal				8	17,414

Table 25. (Continued) Aerial survey salmon escapement counts,^{1/} Yukon district, 1973.

Stream (Drainage)	Date	Survey Rating	Kings	Cohos	Chums
<u>Yukon Territory Streams</u>					
Nordenskiold River ^{4/}	8/29		1		
Bear Feed Creek ^{4/}	9/11		1		
Tatchun Creek ^{4/}	8/26		99		
Little Salmon River	9/5	Poor	27		
Little Salmon River ^{4/}	9/28				21
Big Salmon River	8/24	Poor	75		
Kluane River	10/25				2-3,000
Yukon River (Main Stem)	9/5		27		
Yukon River (Main Stem) ^{4/}	10/2-4				252
Nisutlin	8/24	Very Poor	42		
Subtotal			272		3,273

^{1/} Peak counts listed only. Salmon carcasses included.

^{2/} Helicopter survey by Division of Sport Fish.

^{3/} Weir count.

^{4/} Foot survey.

Appendix Table 15. Subsistence salmon roe sale information, Yukon area, 1974-76.

1974								
Subdistrict	Pounds of raw product			No. of	Value of	Average value	Number of	First 1/ Wholesale value
	King	Chum	Total	Fishermen	sales	to Fisherman	processors	
1								
2		239	239	10	179	17.90		
3		4,103	4,103	25	3,077	123.08		
4	51	23,493	23,544	91	17,665	194.12		
5	238	3,282	3,520	36	2,640	73.33		
6	179	15,784	15,963	24	11,972	498.83		
Total	468	46,901	47,369	186	\$35,533	\$191.04	11	\$74,000
1975								
Subdistrict	Pounds of raw product			No. of	Value of	Average value	Number of	First 1/ Wholesale value
	King	Chum	Total	Fishermen	sales	to Fisherman	processors	
1								
2	61	786	847	26	974	37.46		
3	551	4,908	5,459	18	6,278	348.78		
4	45	32,478	32,523	108	37,401	346.31		
5	1,300	14,787	16,087	33	18,500	560.60		
6	510	18,369	18,879	40	21,711	542.78		
Total	2,467	71,328	73,795	225	\$84,864	\$377.17	14	\$170,000
1976								
Subdistrict	Pounds of raw product			No. of	Value of	Average value	Number of	First 1/ Wholesale value
	King	Chum	Total	Fishermen	sales	to Fisherman	processors	
1								
2	209	612	821	20	1,026	51.30		
3	2,044	1,218	3,262	30	5,260	175.33		
4	494	38,532	39,026	126	48,783	387.17		
5	1,377	11,303	12,680	83	15,850	191.33		
6	1,706	16,992	18,698	70	28,511	407.30		
Total	5,830	68,657	74,487	329	\$99,430	\$302.22	14	\$198,860

1/ Based on 2x that of fisherman value.

Appendix Table 19 Yukon River drainage commercial and subsistence salmon catches, 1903-1973.

Year	Commercial Catch										Subsistence Catch						
	Alaska				Yukon Territory				Total				Yukon Territory				
	King	Coho	Chum	Total	King	Chum	Total	King	Coho	Chum	Total	King	Other Salmon ^{2/}	Total	King	Other Salmon ^{2/}	Total
1903							4,666 ^{8/}				4,666						
1904																	
1905																	
1906																	
1907																	
1908							7,000				7,000						
1909							9,238				9,238						
1910																	
1911																	
1912																	
1913							12,133				12,133						
1914							12,573				12,573						
1915							10,466				10,466						
1916							9,566				9,566						
1917																	
1918	12,239	26,144	73,921	112,304			7,066	12,239	26,144	73,921	119,370		1,400,000	1,400,000			
1919	104,822	37,070	327,898	469,790			1,809	104,822	37,070	327,898	471,590		269,000	269,000			
1920	58,467		155,655	214,122			12,000	58,467		155,655	220,122	20,000	860,000	880,000			
1921	69,645	1,000	111,098	181,744			10,840	69,646	1,000	111,098	192,584						
1922	16,825			16,825			2,420	16,825			19,245	15,000	330,000	345,000			
1923	13,393			13,393			1,813	13,393			15,206	17,500	435,000	452,500			
1924	27,375			27,375			4,560	27,375			31,935		1,130,000	1,130,000			
1925							3,900				3,900	15,000	259,000	274,000			
1926							4,373				4,373	20,500	555,000	575,500			
1927							5,366				5,366		520,000	520,000			
1928							5,733				5,733		670,000	670,000			
1929							5,226				5,226		537,000	537,000			
1930							3,660				3,660		633,000	633,000			
1931							3,473				3,473	26,693	565,000	591,693			
1932	4,739			4,739			4,200	4,739			8,939	23,160	1,092,000	1,115,160			
1933	8,829			8,829			3,333	8,829			12,162	19,950	603,000	622,950			
1934	25,365			25,365			2,000	25,365			27,365		474,000	474,000			
1935	7,265			7,265			3,466	7,265			10,731	20,400	537,000	557,400			
1936	20,963			20,963			3,400	20,963			24,363	22,750	560,000	582,750			
1937	6,226			6,226			3,746	6,226			9,972	5,528	346,000	351,528			
1938	13,727			13,727			860	13,727			14,587	10,244	340,450	359,694			
1939	9,987			9,987			720	9,987			10,707	18,050	327,650	345,700			
1940	18,053			18,053			1,153	18,053			19,206	14,480	1,029,000	1,043,480			
1941	29,905			29,905			2,806	29,905			32,711	17,703	438,000	455,703			
1942	22,487			22,487			713	22,487			23,200		197,000	197,000			
1943	27,650			27,650			609	27,650			28,259		200,000	200,000			
1944	14,232			14,232			986	14,232			15,218						
1945	19,727			19,727			1,333	19,727			21,060						
1946	22,782			22,782			353	22,782			23,135						
1947	54,026			54,026			120	54,026			54,146						
1948	33,842			33,842				33,842			33,842						
1949	36,379			36,379				36,379			36,379						
1950	41,808			41,808				41,808			41,808						
1951 ^{2/}	56,278			56,278				56,278			56,278						
1952	38,637	10,868		49,505				38,637	10,868		49,505						
1953	58,859		5,977	64,836				58,859		5,977	64,836		380,000	380,000			
1954	64,545		14,375 ^{4/}	78,920				64,545		14,375	78,920						
1955	55,925			55,925				55,925			55,925						
1956	62,208		10,742 ^{5/}	72,951				62,208		10,742	72,951						
1957	63,623			63,623				63,623			63,623						
1958	63,735			63,735	3,000	1,500	4,500 ^{7/}	66,735		1,500	68,235	11,890	337,500	349,390	8,000	8,000	
1959	78,370			78,370	2,477	1,098	3,575	80,847		1,098	81,945				5,957	2,000 ^{7/}	7,957
1960 ^{6/}	67,597			67,597	4,035	5,493	9,528	71,632		5,493	77,125				6,965	8,429	15,394
1961	119,664	2,855	42,577 ^{5/}	165,096	3,446	3,278	6,724	123,110	2,855	45,455	171,420	21,438	407,089	428,527	10,175	5,800	16,176
1962	94,716	23,339 ^{5/}	53,766 ^{5/}	171,841	4,037	936	4,973	98,753	23,339	54,702	176,814	11,110	349,141	360,251	10,500	8,500	19,000
1963	117,018	5,575 ^{5/}		122,623	2,233	2,192	4,425	119,331	5,575	2,192	127,098	24,352	396,075	420,937	8,108	25,500	33,608
1964	93,587	2,430	8,347	104,364	3,208	1,929	5,137	96,795	2,430	10,276	109,501	16,171	481,449	497,620			
1965	118,014	661	23,211 ^{5/}	141,886	2,265	2,071	4,336	120,779	661	23,212	144,652	16,608	448,861	465,469	3,000	9,000	12,000
1966	93,315	19,254	71,058 ^{5/}	183,627	1,942	3,157	5,099	95,257	19,254	71,218	167,726	11,572	213,186	224,758	2,700	8,800	11,500
1967	129,430	11,047	49,412 ^{5/}	189,889	2,187	3,343	5,530	131,617	11,047	57,755	195,419	16,448	274,977	291,425	3,000	13,600	16,600
1968	106,526	13,303	67,375	187,204	2,212	435	2,647	108,738	13,303	67,810	189,851	12,106	181,024	193,130	2,900	11,100	14,000
1969	90,720	15,076	142,582	293,378	1,640	2,279	3,919	92,360	15,076	194,861	302,297	14,000	210,772	224,772	1,000	5,500	6,500
1970	79,301	13,188	347,348 ^{5/}	439,837	2,611	2,479	5,090	81,912	13,188	349,027	444,927	14,310	225,528	239,838	2,100	1,200	3,300
1971	110,507	12,203	289,685 ^{5/}	412,395	3,178	1,761	4,939	113,685	12,203	291,446	417,334	22,451	201,533	223,984	2,800	14,000	16,800
1972	92,840	22,233	297,844	412,917	1,769	2,532	4,301	94,609	22,233	293,376	407,218	17,931	133,102	151,033	1,657	8,000	9,657
1973	75,353	36,641	518,035 ^{5/}	630,029	1,871	2,228	4,099	77,224	36,641	520,263	634,128	20,099	179,241	199,340	2,116	6,930	9,046

1/ Does not include subsistence catches from the village of Stehbins, a coast village located northeast of the Yukon River mouth.

2/ Mostly chum salmon, but includes small numbers of pink and coho salmon.

3/ Data source for Alaska commercial catches: USFWS Stat. Digest No. 50 for the years 1951-59, unless otherwise indicated.

4/ Data source: Alaska Fisheries and Fur-Seal Industry Report for 1954.

5/ Includes small numbers of pink or red salmon (less than 100).

6/ Data source for Alaska commercial catches: ADFA Stat. Leaflets for years since 1960.

7/ Data source: Environment Canada, Fisheries Service (Whitehorse).

8/ Catch data for years 1903-1947 obtained by dividing total poundage of mixed salmon by an arbitrary weight of 15 pounds.

Species breakdown is unknown. Figures considered conservative (data collected by Royal Canadian Mounted Police).

Appendix Table 20. Yukon district commercial, vessel and gill net licenses issued by sub-district, 1960-1973.^{1/}

	<u>Year</u>	<u>334-10</u>	<u>334-20</u>	<u>334-30</u>	<u>334-40^{2/}</u>	<u>Totals</u>
Commercial	1960	193	96		18	307
	1961	238	130	26	18	412
	1962	321	148	46	18	533
	1963	285	131	30	5	451
	1964	319	119	31	18	487
	1965	327	143	34	35	539
	1966	393	143	21	20	577
	1967					607
	1968					585
	1969	406	131	32	21	590
	1970	393	164	33	36	625
	1971	459	162	37	57	715
	1972	473	193	43	56	765
	1973	515	206	50	101	872
Fishing vessel	1960	186	33		10	229
	1961	210	112	18	10	350
	1962	320	127	31	12	490
	1963	272	113	22	6	413
	1964	314	101	24	12	451
	1965	322	111	26	27	486
	1966	365	113	18	20	516
	1967	381	126	22	20	549
	1968	340	124	26	20	510
	1969	361	93	24	20	498
	1970	349	143	27	28	546
	1971	416	145	29	43	633
	1972	426	153	35	46	660
	1973	458	167	38	76	739
Set net	1960	183	59		2	244
	1961	217	101	19	1	338
	1962	303	117	14	2	436
	1963	259	101	21	2	383
	1964	277	100	28	4	409
	1965	292	98	23	7	420
	1966	345	101	17	5	468
	1967	333	72	21	5	431
	1968	314	62	26	8	410
	1969	346	62	15	14	437
	1970	345	105	24	17	490
	1971	399	115	30	27	571
	1972	439	130	36	29	634
	1973	450	159	30	40	679

Appendix Table 20. Yukon district commercial, vessel and gill net licenses issued by sub-district, 1960-1973.^{1/}

	<u>Year</u>	<u>334-10</u>	<u>334-20</u>	<u>334-30</u>	<u>334-40^{2/}</u>	<u>Totals</u>
Commercial	1960	193	96		18	307
	1961	238	130	26	18	412
	1962	321	148	46	18	533
	1963	285	131	30	5	451
	1964	319	119	31	18	487
	1965	327	143	34	35	539
	1966	393	143	21	20	577
	1967					607
	1968					585
	1969	406	131	32	21	590
	1970	393	164	33	36	625
	1971	459	162	37	57	715
	1972	473	193	43	56	765
	1973	515	206	50	101	872
Fishing vessel	1960	186	33		10	229
	1961	210	112	18	10	350
	1962	320	127	31	12	490
	1963	272	113	22	6	413
	1964	314	101	24	12	451
	1965	322	111	26	27	486
	1966	365	113	18	20	516
	1967	381	126	22	20	549
	1968	340	124	26	20	510
	1969	361	93	24	20	498
	1970	349	143	27	28	546
	1971	416	145	29	43	633
	1972	426	153	35	46	660
	1973	458	167	38	76	739
Set net	1960	183	59		2	244
	1961	217	101	19	1	338
	1962	303	117	14	2	436
	1963	259	101	21	2	383
	1964	277	100	28	4	409
	1965	292	98	23	7	420
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	1967	333	72	21	5	431
	1968	314	62	26	8	410
	1969	346	62	15	14	437
	1970	345	105	24	17	490
	1971	399	115	30	27	571
	1972	439	130	36	29	634
	1973	450	159	30	40	679

Appendix Table 20. (continued) Yukon district commercial, vessel and gill net licenses issued by sub-district, 1960-1973.^{1/}

	<u>Year</u>	<u>334-10</u>	<u>334-20</u>	<u>334-30</u>	<u>334-40</u>	<u>Totals</u>
Drift net	1960	2	44			46
	1961	17	86			103
	1962	55	98	24		177
	1963	24	85	5		114
	1964	65	89	5		159
	1965	62	98	4		164
	1966	97	88	4		189
	1967	135	109	5		249
	1968	111	104	8		223
	1969	142	100	10		252
	1970	110	127	16	1	254
	1971	140	134	19	2	295
	1972	155	142	17	5	319
	1973	165	151	18	1	335

- 1/ Distribution of licenses by sub-district represents that at the beginning of the fishing season (June 1), some fishermen transfer to other sub-districts during the season.
- 2/ Fishwheels operated each year in 334-40 were: 1962 (13), 1963 (3), 1964 (7), 1965 (20), 1966 (17), 1967 (?), 1968 (13), 1969 (11), 1970 (16), 1971 (26), 1972 (25), 1973 (56).
- 3/ Fishwheels operated each year in 334-30 were: 1973 (4).

Appendix Table 24. Commercial salmon catches by species and subdistrict, Yukon district, 1960-1973.

Year	King salmon					Coho salmon				
	334-10	334-20	334-30	334-40	Total	334-10	334-20	334-30	334-40	Total
1960	50,713	15,994	-	884	67,591	-	-	-	-	-
1961	84,463	29,028	4,965	1,804	120,260	2,855	-	-	-	2,855
1962	67,099	22,224	4,687	724	94,734	22,926	-	-	-	22,926
1963	85,004	24,211	6,976	803	116,994	5,572	-	-	-	5,572
1964	67,555	20,246	4,705	1,081	93,587	2,446	-	-	-	2,446
1965	89,268	23,763	3,204	1,863	118,098	350	-	-	-	350
1966	70,788	16,927	3,612	1,988	93,315	19,254	-	-	-	19,254
1967	104,350	20,289	3,618	1,449	129,706	9,925	-	1,122	-	11,047
1968	79,465	21,392	4,543	1,126	106,526	13,153	-	150	-	13,303
1969	70,862	14,799	3,577	985	90,223	14,041	-	845	95	14,981
1970	57,681	17,210	3,712	1,666	80,269	12,245	-	-	-	12,245
1971	86,042	19,226	3,490	1,749	110,507	12,165	-	-	38	12,203
1972	70,052	17,855	3,841	1,092	92,840	21,705	506	-	22	22,233
1973	56,981	13,859	3,204	1,309	75,353	34,860	1,781	-	-	36,641

Year	Chum salmon					Total salmon				
	334-10	334-20	334-30	334-40	Total	334-10	334-20	334-30	334-40	Total
1960	-	-	-	-	-	50,713	15,994	-	884	67,591
1961	42,577 ^{1/}	-	-	-	42,577 ^{1/}	129,895	29,028	4,965	1,804	165,692
1962	53,160 ^{1/}	-	-	-	53,160 ^{1/}	143,185	22,224	4,687	724	170,820
1963	-	-	-	-	-	90,576	24,211	6,976	803	122,566
1964	8,347	-	-	-	8,347	78,348	20,246	4,705	1,081	104,380
1965	22,936	-	-	381	23,317	112,554	23,763	3,204	2,244	141,765
1966	69,836	-	1,209	-	71,045	159,878	16,927	4,821	1,988	183,614
1967	46,148	1,425	1,880	-	49,453	160,423	21,714	6,620	1,449	190,206
1968	62,852 ^{1/}	1,407	3,136	-	67,395	155,470	22,799	7,829	1,126	187,224
1969	184,411	5,024	1,722	703	191,860	269,314	19,823	6,144	1,783	297,064
1970	320,138	22,394	3,285	907	346,724	390,064	39,604	6,997	2,573	439,238
1971	282,461	6,112	50	1,061	289,684	380,668	25,338	3,540	2,848	412,394
1972	250,945	33,805	1,840	1,254	287,844	342,702	52,166	5,681	2,368	402,917
1973	395,427	109,041	463	13,003	517,934	487,272 ^{1/}	124,778 ^{1/}	3,667	14,312	630,029 ^{1/}

^{1/} includes small numbers of pink or red salmon

Appendix Table 22. Comparative commercial king salmon catch data, Yukon district, 1960-1973^{1/}.

	Year	334-10	334-20	Sub-total (10+20)	334-30	334-40	Totals -334
Commercial Catch							
	1960	50,713	15,994	66,707		884	67,591
	1961	84,406	29,028	113,434	4,965	1,804	120,203
	1962	67,072	22,224	89,296	4,687	724	94,707
	1963	85,004	24,211	109,215	6,976	803	116,994
	1964	67,555	20,246	87,801	4,705	1,081	93,587
	1965	89,268	23,763	113,031	3,204	1,863	118,098
	1966	70,783	16,927	87,710	3,612	1,988	93,310
	1967	104,335	20,289	124,624	3,618	1,449	129,691
	1968	79,465	21,392	100,857	4,543	1,126	106,526
	1969	70,588	14,799	85,387	3,577	985	89,949
	1970	57,502	17,210	74,712	3,712	1,666	80,090
	1971	84,397	19,226	103,623	3,490	1,749	108,862
	1972	68,059	17,317	85,376	3,841	1,092	90,309
	1973	52,790	12,479	65,269	3,204	1,309	69,782
	Year	334-10	334-20	Sub-total (10+20)	334-30		
Boat Hours (Catch per boat hour)							
	1960	40,848 (1.24)	34,914 (0.46)	75,762 (0.88)			
	1961	79,224 (1.07)	29,118 (1.00)	108,342 (1.05)		2,808 (1.77)	
	1962	84,792 (0.79)	38,118 (0.58)	122,910 (0.73)		2,520 (1.86)	
	1963	72,288 (1.18)	27,672 (0.87)	99,960 (1.09)		5,616 (1.24)	
	1964	56,736 (1.19)	22,398 (0.91)	79,134 (1.11)		4,596 (1.02)	
	1965	78,096 (1.14)	31,008 (0.77)	109,104 (1.04)		2,286 (1.40)	
	1966	69,894 (1.01)	22,380 (0.76)	92,274 (0.95)		1,782 (1.23) ^{2/}	
	1967	102,456 (1.02)	37,488 (0.54)	139,944 (0.89)		4,050 (0.89)	
	1968	92,450 (0.86)	32,280 (0.66)	124,730 (0.81)		3,745 (1.21)	
	1969	84,864 (0.83)	27,828 (0.53)	112,692 (0.76)		3,577 (0.72)	
	1970	61,260 (0.94)	20,460 (0.84)	81,720 (0.91)		3,566 (1.04)	
	1971	73,272 (1.15)	19,956 (0.96)	93,228 (1.11)		4,790 (0.73)	
	1972	79,236 (0.86)	19,872 (0.87)	99,108 (0.86)		5,916 (0.65)	
	1973	75,036 (0.70)	23,496 (0.53)	98,532 (0.66)		7,282 (0.44)	

^{1/} 334-10 and 334-20 data are only for the king salmon season (June & early July).

^{2/} Catch per vessel hour does not include 1,421 king salmon captured by an unknown number of fishermen.

Appendix Table 23. King salmon catches by statistical areas, subdistrict 334-10 of the Yukon district 1965-1973.^{1/}

Stat. Area	1965	1966	1967	1968	1969	1970	1971	1972	1973
334-11 (Black River)	2,266	2,495	2,110	4,047	1,405	4,992	3,038	2,730	7,193
12 (South Mouth)	18,140	20,038	25,811	27,859	21,894	23,367	25,105	11,638	28,166
13 (Sunshine Bay)	8,137	5,460	6,203	7,997	9,635	5,258	7,135	3,435	4,302
14 (Kwiguk)	6,836	4,143	7,730	3,202	5,594	5,351	10,342	9,073	3,468
15 (Middle Mouth)	23,729	10,858	27,202	6,700	12,875	6,079	16,853	18,375	756
16 (North Mouth)	4,458	3,009	4,729	919	3,833	849	3,924	5,276	40
17 (Head of Passes)	16,114	12,898	18,583	17,378	9,930	4,890	12,037	13,059	6,683
18 (Fish Village)	9,588	11,882	11,967	11,363	5,422	6,716	5,963	4,473	2,182
334-10 Total	89,268	70,783	104,335	79,465	70,588	57,502	84,397	68,059	52,790

^{1/} Catch data only for king salmon season (June and early July).

Appendix Table 24. Comparative commercial coho and chum salmon catch data for the fall season, subdistrict 334-10 Yukon district, 1961-1973.

<u>Year</u>	<u>Duration</u>	<u>Days^{1/} fished</u>	<u>Boat hours</u>	<u>Commercial catch (catch/boat hour)</u>	
				<u>Coho</u>	<u>Chum</u>
1961	8/1-8/31	16	14,772	2,855 (0.2)	42,461 (2.9)
1962	8/1-9/3	21	46,950	22,926 (0.5)	53,116 (1.1)
1963	8/9-9/6	18	2,100	5,572 (2.7)	no purchases
1964	8/3-8/27	17	8,346	2,446 (0.3)	8,347 (1.0)
1965	8/2-8/4	<u>2/</u>	<u>2/</u>	350 (<u>2/</u>)	22,936 (<u>2/</u>)
1966	7/25-9/10	28	41,994	19,254 (0.5)	69,836 (1.7)
1967	7/24-8/27	21	19,272	9,925 (0.5)	36,451 (1.9)
1968	7/22-8/28	22	47,232	13,153 (0.3)	49,857 (1.1)
1969	7/11-8/23	25	47,352	14,041 (0.3)	148,017 (3.1)
	7/21-8/23 ^{3/}	20	39,408	14,041 (0.4)	128,866 (3.3)
1970	7/14-8/26	25	68,712	12,245 (0.2)	232,969 (3.4)
	7/20-8/26 ^{3/}	22	56,160	12,245 (0.2)	200,306 (3.6)
1971	7/12-9/4	32	108,336	12,165 (0.1)	246,384 (2.3)
	7/22-8/28 ^{3/}	22	85,344	11,582 (0.1)	178,744 (2.1)
1972	7/11-9/2	32	106,974	21,705 (0.2)	181,287 (1.7)
	7/20-8/26 ^{3/}	22	81,726	19,655 (0.2)	134,752 (1.6)
1973	7/12-9/1	30	140,304	34,860 (0.2)	212,235 (1.5)
	7/19-8/25	22	107,136	34,860 (0.3)	173,783 (1.6)

^{1/} One "day" is equivalent to 24 hours during open fishing period.

^{2/} Information not available.

^{3/} More comparable to duration of fishing for past seasons.

Appendix Table 25. Commercial salmon pack by species and type of processing, Yukon district, 1960-1973.^{1/}

Year	Cases (48#)			Fresh-frozen (round wt. in lbs.)			Cured King Salmon		Salmon Roe (lbs.)
	King	Coho	Chum	King	Coho	Chum	Tierces	1/2 Tierce	
1960	13,000			<u>2/</u>	<u>2/</u>	<u>2/</u>	250	180	
1961	19,474			<u>2/</u>	<u>2/</u>	<u>2/</u>	504	146	
1962	15,959	512	1,760	<u>2/</u>	<u>2/</u>	<u>2/</u>	464	280	
1963	16,400	1,190		<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	
1964	12,041			<u>2/</u>	17,100	66,770	537	499	
1965	18,149			275,000	2,500	160,500	670	67	
1966	14,026	836	2,812	414,000	61,355	301,240	398	60	
1967	21,503		126	475,900	66,400	366,496	627	96	1,755
1968	19,499		816	561,690	93,154	454,409	351	170	21,000
1969	9,560	1,104	4,499	423,597	26,973 ^{3/}	841,586 ^{3/}	647	95	29,000
1970	6,431	1,002	6,413	716,600	12,900	1,725,000	498 ^{4/}	191	26,300
1971	6,500	502	3,213	1,058,034	45,836	1,432,455	798 ^{5/}	229	55,177
1972	7,418	1,005	6,249	1,002,395	83,960	1,495,922	497	147	85,278
1973	5,227	1,008	9,902	1,339,317	181,928	2,920,532	61	205 ^{6/}	137,594

^{1/} Pack represents type of processing when fish were shipped out of district.

^{2/} Information not available.

^{3/} Includes approximately 11,600 and 110,500 lbs. (round weight) of coho and chum salmon respectively as salted fish for Japanese market. Also includes 15 tierces of mild cured chum salmon (12,000 lbs. round weight).

^{4/} Includes 51 tierces chum salmon.

^{5/} Includes 139 tierces chum salmon.

^{6/} Includes 72 half tierces chum salmon.

Appendix Table 26. Dollar value estimates of Yukon district commercial fishery, 1960-1973.^{1/}

Year	Gross value of catch to fishermen	Wages earned ^{2/}	Total income to district	Wholesale value of pack ^{3/}	Tax revenues to state
1960	\$	\$	\$	\$	\$
1961	437,000			1,292,300	37,500
1962	361,900			1,275,250	50,400
1963	412,300			1,550,400	42,000
1964	354,400			1,203,800	35,000
1965	542,300			1,412,700	42,000
1966	454,500			1,308,100	37,000
1967	606,400	250,000	856,400	1,864,800	41,700
1968	535,000	264,000+	799,000+	1,655,156	47,000
1969	519,200	234,000+	753,000+	1,976,179	40,000
1970	623,100	185,800+	808,900+	2,113,100	45,000
1971	783,000	357,700+	1,140,700+	2,106,600	42,000
1972	784,000	445,400+	1,229,400	2,405,200	45,300
1973	1,217,000	585,800+	1,802,900+	4,453,900	53,900

^{1/} Information not available for 1960 and wages earned during 1961-1966.

^{2/} Includes wages paid to tender boat operators, processing plant employees in district.

^{3/} Based on type of processing when fish were shipped out of the district.

Appendix Table 27. Estimated mean prices paid to fishermen, Yukon district, 1961-1973^{1/} (prices per fish)

<u>Year</u>	<u>King</u>	<u>Coho</u>	<u>Chum</u>	<u>Other</u>
1961	\$3.50	\$	\$	\$
1962	3.50			
1963	3.50			
1964	3.75	.50	.25	
1965	4.50		.35	
1966	4.50	.50	.35	
1967	4.50	.50	.35	
1968	4.64	.50	.50	
1969	4.60	.55	.50	
1970	5.00	.84	.61	
1971	5.34	.82	.64	
1972	5.90	.92	.75	
1973	7.45	1.27	1.18	

^{1/} Information not available for some species.

Appendix Table 28. Mean weights and numbers of salmon per case, Yukon district, 1962-1973.^{1/}

<u>Year</u>	<u>Mean round weight in pounds^{2/}</u>			<u>Mean no. of fish/case^{3/}</u>		
	<u>King</u>	<u>Coho</u>	<u>Chum</u>	<u>King</u>	<u>Coho</u>	<u>Chum</u>
1962				3.2	13.3	10.5
1963						
1964	22.6		8.0	3.4		
1965	23.0		6.6	3.3		
1966	23.0		6.9	3.5		
1967	24.0	7.3	7.0	3.2		
1968	26.5		8.3	3.3		11.0
1969	23.9	6.7	6.5	3.4	10.0	12.0
1970	22.3	7.1	6.7	3.7	10.6	11.7
1971	22.6	6.9	6.4	3.3	10.3	12.4
1972	24.6	7.1	6.8	3.2	10.1	11.8
1973	24.5	7.1	7.4	3.1	10.5	10.8

^{1/} Information is not available for some species.

^{2/} Based on age-length-weight samples or fish ticket entries.

^{3/} Standard 48 lb. case.

Appendix Table 29. Yukon River comparative subsistence catch and effort data, 1961-1973 (numbers per fishing family are in parenthesis).

Year	Total Catch		Equivalent Catch ^{1/}		Mean Equivalent Catch per Family ^{1/}	
	King Salmon	Other salmon ^{2/}	King salmon	Other salmon ^{2/}	King salmon	Other salmon ^{2/}
1961	23,719	407,814	23,719	405,632	38	650
1962	19,910	358,441	13,010	329,144	23	583
1963	32,656	421,625	26,141	372,578	44	624
1964	22,817	485,630	19,480	460,712	32	765
1965	19,723	458,379	16,950	436,306	31	806
1966	14,017	214,236	11,507	204,913	23	415
1967	19,661	288,595	16,306	256,926	35	545
1968 ^{3/}	14,832	189,607	11,883	170,522	25	358
1969	14,946	213,725	13,916	195,476	30	426
1970	15,926	223,237	13,474	199,163	34	498
1971	24,755	200,568	21,670	171,247	51	399
1972	19,541	140,102	17,079	119,335	43	298
1973	22,215	186,179	19,458	167,106	42	360

Year	Fishing families surveyed ^{1/}	People in fishing families ^{1/}	Snowmachines ^{1/}	Sled dogs ^{1/}	Gear operated ^{1/}	
					Gill nets	Fishwheels
1961	624	3,626 (5.8)		4,806 (7.7)	577	169
1962	564	3,279 (5.8)		3,848 (6.8)	613	138
1963	597	3,460 (6.9)		4,155 (7.0)	716	156
1964	602	3,524 (6.0)		4,003 (6.6)	840	155
1965	541	3,453 (7.3)		3,974 (7.3)	647	127
1966	494	3,144 (6.4)		3,112 (6.3)	578	116
1967	471	2,756 (5.9)	192 (0.4)	2,752 (5.8)	530	87
1968	476	3,109 (6.5)	262 (0.6)	2,719 (5.7)	565	71
1969	459	2,974 (6.5)	349 (0.8)	2,442 (5.3)	594	63
1970	400	2,679 (6.7)	346 (0.9)	2,214 (5.5)	647	55
1971	429	2,795 (6.5)	414 (1.0)	1,894 (4.4)	683	56
1972	401	2,508 (6.3)	423 (1.1)	1,375 (3.4)	698	57
1973	463	2,894 (6.3)	485 (1.0)	2,030 (4.4)	840	77

^{1/} Data from villages surveyed each year since 1961: Mouth to Fort Yukon and Tanana River (does not include Fairbanks area).

^{2/} Mostly chum salmon, some pinks and cohos.

^{3/} Total king and other salmon catches have been corrected.

Appendix Table 30. Comparative Yukon River drainage king salmon escapement counts 1959-1973.^{1/}

Year	Andreafsky River (East fork)	Andreafsky River (West fork)	Anvik River
1960	1,020	1,220	1,950
1961	1,003		1,226
1962	675 ^{2/}	762 ^{2/}	
1963			
1964	867	705	
1965		355 ^{2/}	650 ^{2/}
1966	361	303	638
1967		276 ^{2/}	336 ^{2/}
1968	380	383	297 ^{2/}
1969	231 ^{2/}	274 ^{2/}	296 ^{2/}
1970	665	574 ^{2/}	368 ^{2/}
1971	1,904	1,284	
1972	798	582 ^{2/}	1,172 ^{4/}
1973	825	788	613 ^{4/}

Year	Salcha River	Nisutlin River (Sidney-100 Mile Cr.)	Whitehorse Dam Fishway
1959			1,054
1960	1,660		660
1961	2,878		1,068
1962	937		1,500
1963			484
1964	450		587
1965	408		903
1966	800		563
1967			533
1968	735	407	407
1969	461 ^{2/}	105	334
1970	1,882	615	625
1971	159 ^{2/}	640 ^{3/}	856
1972	1,193	317	392
1973	249	36 ^{2/}	228

^{1/} With exception of Whitehorse fishway counts, the data was obtained from aerial surveys which were made only of the main stem of each river listed.

^{2/} Incomplete survey or poor survey conditions resulting in a very minimal count.

^{3/} Canadian Department of Fisheries survey.

^{4/} Combination tower counts and aerial survey estimates.

Appendix Table 31. Comparative Yukon River drainage chum salmon aerial survey escapement estimates, 1958-1973.

Year	SUMMER CHUMS				FALL CHUMS		
	Andreafsky River (East Fork)	Andreafsky River (West Fork)	Anvik River	Salcha River	Tanana River	Delta River	Fishing Branch River
1958			100-200,000				
1959			200,000				
1960	3,830		11,110	670			
1961	8,110			1,152			
1962	18,040	19,530	20,600	1,161	862	46 ^{1/}	
1963							
1964		12,810	12-14,000 ^{1/}	250 ^{1/}			
1965		14,670 ^{1/}	100,000	2,375			
1966	25,619	18,145	37,500	2,200			
1967		14,495 ^{2/}	116,000				
1968	17,600 ^{2/}	74,600 ^{2/}	51,580 ^{1/}	3,790			
1969	119,000	159,500		425 ^{1/}			
1970	84,090	91,710 ^{1/}	232,780	7,879	800	800	
1971	98,095	71,745		306 ^{1/}			115,000+
1972	41,460	25,573	245,857 ^{3/}	947 ^{1/}	19,657	3,650	35,326 ^{4/}
1973	10,149 ^{1/}	51,835	86,665 ^{3/}	290	9,365	7,971	16,239 ^{5/}

^{1/} Poor survey conditions.

^{2/} Includes some pinks.

^{3/} Combined tower and aerial survey estimates.

^{4/} Combined weir count and population estimate.

^{5/} Weir count.